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CONRAD BERENS, M.D.
Editor-in-Chief for Ophthalmology

CHEVALIER L. JACKSON, M.D.
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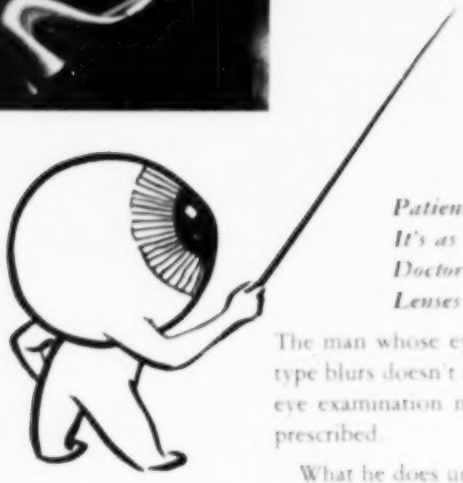

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FOREWORD

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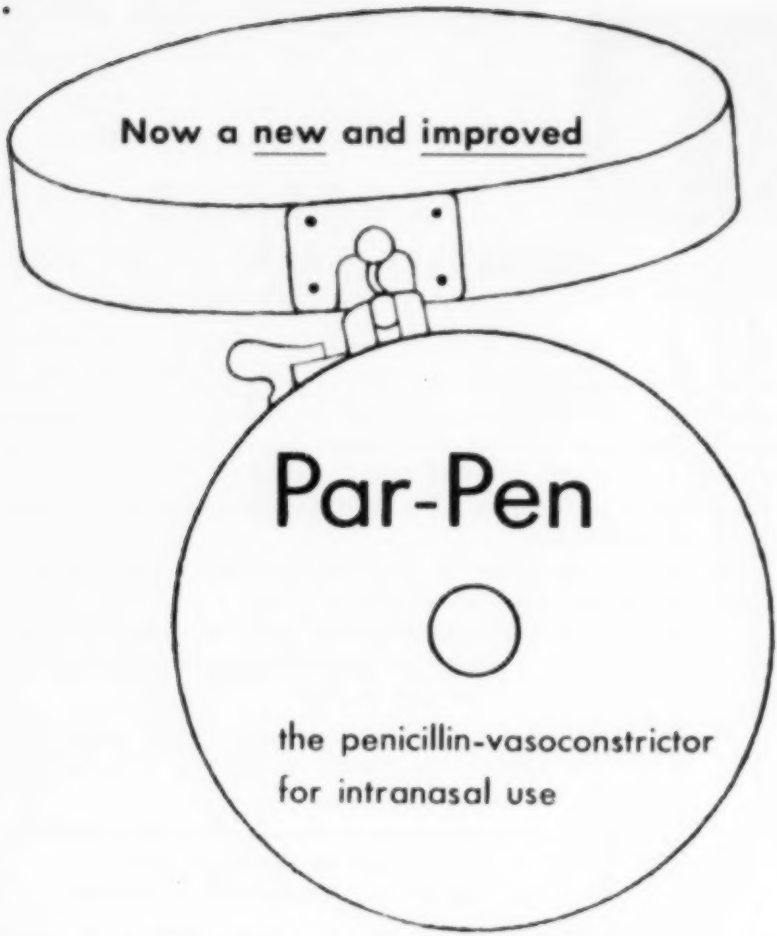

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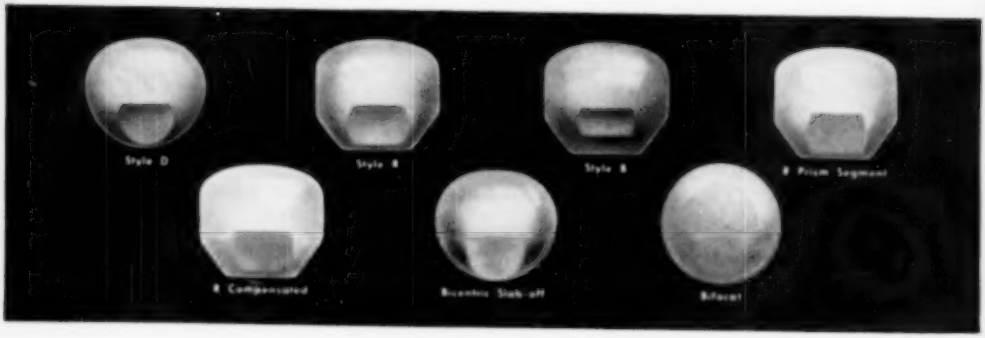

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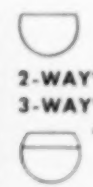

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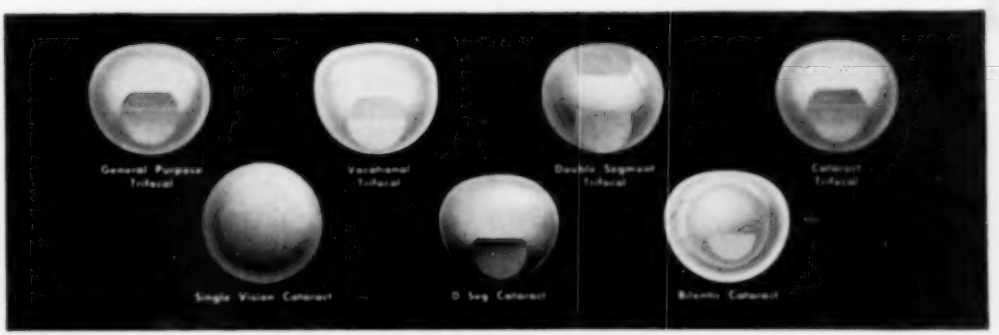

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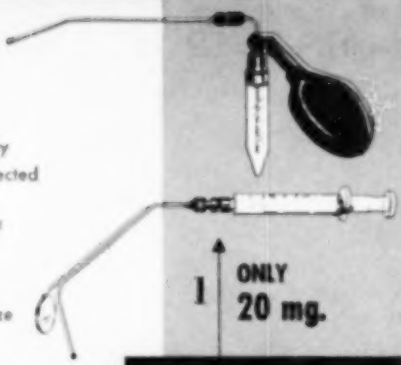

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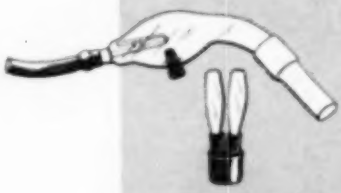

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3. Miller, J. B., Mann, F., and Abramson, H. A.: Diseases of the Chest, 16:408, Oct., 1949.

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OPHTHALMOLOGY

Anatomy, Embryology, Heredity, Development and Nutrition

A Family of the Valley of St.-Imier (Switzerland), Manifesting the Recessive Transmission by Consanguinity of Multiple Ocular Malformations (*Une souche de Vallon de St.-Imier (Suisse), manifestant par consanguinité la transmission récessive de malformations oculaires multiples*). *U. Pfändler, Chaux-de-Fonds, Switzerland.* Ophthalmologica 119: 103–13, Feb. 1950.

The author describes a family in which 4 cases of hereditary ocular disease occurred in three branches of the same family; a definite consanguinity was evident in the family history. All of these 4 patients were congenitally blind. In 3 cases there was ectopia of the crystalline lens and keratoconus; in 2 of these cases there was associated congenital cataract and in 1 case, associated congenital atrophy of the optic nerves and unilateral glaucoma. In the fourth case the cause for the congenital blindness was not definitely determined, but it was probably of the same type. There was mental deficiency of various degrees (in 1 case idiocy). A study of the family history indicated a recessive inheritance of the defect. In a collateral branch of this family a case of complete (congenital) color blindness was found. 12 references. 3 figures (charts).

A Family with Eight Generations of Hereditary Cataract. *Else Marner, Copenhagen, Denmark.* Acta. Ophth. 27: 537–51, Fasc. 4, 1949.

The author describes a Danish family, followed through eight generations and now comprising 542 members, 132 of whom have cataract.

The cataract descent is dominant, with equal numbers of both sexes attacked. There are no other hereditary defects and the standard of intelligence is not low. The cataracts are bilateral, usually equal in both eyes. Besides the well-known types of congenital cataract there is one that is characteristic of this family, possibly to be regarded as a partial stellar cataract. The types of cataract are distributed among the family without genetic regularity. The cataract progresses and sometimes becomes mature. Myopia is recorded for 21 members, 9 of them closely related. Eleven have convergent squint and 4 divergent; 9 have nystagmus and 3 of these had good vision both in early childhood and postoperatively. Eighty-three were operated upon, some with iridectomy, although in most instances this was followed by another operation later, some with discissions, discission with subsequent evacuation of lens substance, linear extraction, extracapsular extraction or reclination. Operation ages were from ½ to 71 years; 68% obtained ≥ 6/18 with the best eye. The best results were obtained with those children for whom the operation could be postponed until after their eighth year. Discission plus evacuation of lens substance gave the best results. In 12 patients there were operative or postoperative complications. The author has investigated the social consequences of the family's cataracts. There was no great difference in the social position of those with cataract and those without, although those with it seemed to have been more inclined to remain in rural areas. The ratio of married to unmarried is the same for those with and without cataract. Sterilization has been performed on 3 and procured abortion on 5. 23 references. 4 figures. 4 tables. 1 chart.—*Author's abstract.*

Multiple Congenital Anomalies of the Eyes. *A. J. Ballantyne, Glasgow, Scotland.* Proc. Roy. Soc. Med. 42: 756-62, Sept. 1949.

The patient, a female, seen six days after birth, had signs of iridocyclitis in the right eye. These disappeared under treatment, and the following anomalies were observed: coloboma of the upper lid, subconjunctival lipoma, dermoids at the limbus, coloboma of the iris up and out, and bands of glassy-looking tissue crossing the anterior chamber from angle to angle and adhering at several points to cornea, iris and lens. There was also a small coloboma of the skin at the right nasolabial junction, and a small anterior polar cataract in the left eye.

At the age of 15 the right eye became irritable and was removed. The lens was found to be dislocated up and out in the direction of the iris coloboma. Sections showed that the tissue bands, or incomplete membrane, stretched across the anterior chamber from angle to angle, emerging from the deep surface of the corneosclera and apparently in continuity with the deepest layers. At several points they were adherent to the iris and to the lens. The displaced lens was opaque and shrunken, and was impacted in a recess in the corneosclera. In this area there was complete absence of iris, and there were no traces of the

tunica vasculosa lentis. The bands were of tough mesoblastic material, and there was nothing to suggest an inflammatory origin. Their origin was best explained by assuming a failure of the normal splitting of the mesoblast which forms the structures surrounding the anterior chamber, the bands belonging initially to the deep layers of the corneosclera and showing the same fibrillary structure and staining reactions. The lens was probably abnormal from the beginning (there was evidence of maldevelopment of the nucleus), and its displacement before the appearance of the rudimentary iris would account for the complete inhibition of the growth of the iris at that point. 9 references. 7 figures.—*Author's abstract.*

Some Aspects of Muller's Orbital Muscle. *Liam G. O'Connell.* Irish J. M. Sc. 6: 39–42, Jan. 1950.

A preliminary report on the morphological and histological features of Muller's orbital muscle of the human subject and of the higher mammals reveals the following results.

1. Human adult: (a) morphological features are as described in the texts on anatomy; (b) histological structure is that of a mass of smooth muscle pervaded by a series of blood "sinusoids" of about 40 μ in diameter. These latter have a regular arrangement and are clearly lined by endothelium. Reasons are given as to why it is unlikely that they are artifacts of postmortem laking of blood. There is no elastic tissue nor are there any blood vessels passing through the muscle from orbital to temporal surface.

2. Human embryo: (a) morphological—at 5 months, when the muscle was identified for the first time, its structure and arrangement were similar to that obtained in the non-primates. Later with growth of the greater wing of the sphenoid it took on human characteristics; (b) histological—sinusoids were few at 5 months but increased in number up to adult density at 8 months, and thereafter remained constant in number and density.

It is pointed out that the human structure differs radically from that of the non-primate in that the latter has no sinusoids, but has some vessels passing from orbital to temporal aspects of the muscle. The latter muscle also contains a large quantity of elastic tissue which was not present in the human material at any stage outside of the blood vessels. 6 figures.

Optics, Physiology and Psychology of Vision

Notes on Functional Disturbances of Vision. *Harold L. Friedenberg, Richmond, Va.* Am. J. Optom. & Arch. Am. Acad. Optom. 27: 21–23, Jan. 1950.

The causes and manifestations of functional amblyopia and amaurosis are noted and methods of diagnosis are discussed. Emphasis is

placed on differentiating between the hysterical patient and the malingerer. The typical field findings of hysteria are described and the use of quantitative perimetry as the most efficient means of diagnosis is discussed. 5 references.—*Author's abstract.*

Combined Effects of Spherical Aberration and Diffraction on the Retinal Image. *Glenn A. Fry, School of Optometry, Ohio State University, Columbus, Ohio.* Am. J. Optom. & Arch. Am. Acad. Optom. 27: 126–36, March 1950.

The paper describes a method of computing the combined effects of spherical aberration and diffraction on the blurredness of the retinal image of a monochromatic point source located on the optic axis of an eye which has a centered system of refracting surfaces, each of which is radially symmetrical but not necessarily spherical. This restriction rules out chromatic aberration and all types of astigmatism. The Stiles-Crawford phenomenon has not been taken into consideration. Distributions have been computed for the image of a monochromatic (589 mμ.) point source with the retina placed at different distances from the exit pupil. The eye used in this investigation incorporates a combination of properties possessed by Laurance's No. 1 schematic eye but incorporates also Ivanoff's data for spherical aberration for a typical emmetropic human eye with relaxed accommodation. The calculations show that the sharpest image is obtained when the retina falls just in front of the intersection of the marginal rays. Furthermore, they show that the caustic surface by itself gives almost no indication of the character of the distribution of intensity. 3 references. 6 figures.—*Author's abstract.*

Objective and Subjective Measures of Night Myopia. *Z. J. B. Schoen, Chicago College of Optometry, Chicago, Ill.* Am. J. Optom. & Arch. Am. Acad. Optom. 27: 88–94, Feb. 1950.

Night myopia is generally explained by the simultaneous intervention of ocular chromatic aberration together with the Purkinje phenomenon, and undercorrected spherical aberration of the eye. The first factor is said to account for about 0.3 or 0.4 D. and the second for most of the balance up to a probable maximum of 1.7 D.; other contributory factors play more or less minor rôles in its causation. Since the chromatic and Purkinje effects are universally acknowledged and their parts in the manifestation of the phenomenon are understood, investigation is now centered around the influence of spherical aberration as a major cause. Experimental measurements of nocturnal myopia are open to the criticism that in almost all instances concave lenses or negative optical effectivities were used. The question remains, do these agents increase scotopic visual acuity by correcting a true relative myopia or do they create an artificial hyperopia which, when compensated by the accommodation thereby stimulated, results in added clarity of the sco-

topic image? For example, Ivanoff contends that night myopia is an artifact caused by increased accommodation which counteracts the positive spherical aberration so harmful to the dim image under conditions of decreased differential sensitivity of the retina in scotopic vision. He believes that the image is on the retina and that concave lenses of appropriate power make possible the increased accommodation and thus myopia is simulated.

In order to learn whether the ocular image actually is in front of the retina during the manifestation of night myopia two experimental approaches were used. The first was skiascopy, employing pure red filters whose dominant wavelength was 619 mμ, the "cut-off" point 592 mμ; photopic transmission, 6.9%; scotopic transmission 0.345%. The advantages of this method were its objectivity and the fact that the part played by chromatic aberration, already well understood, was eliminated. The use of a white beam was impossible for obvious reasons. Since the relatively pure red filters used had a photopic-scotopic transmission ratio of 20 to 1, dark adaptation and scotopic acuity were not interfered with while at the same time the reflex was clearly seen, photopically, by the experimenter. Pure deep red light likewise has practically no effect on the pupillomotor fibers and hence pupil size is relatively unchanged. The only disadvantage in using this method lies in the fact that the position of the ocular image relative to the retina is measured insofar as the retinoscope determines it. The "retinoscopic image" is not a true index of the part of the image caustic used by the eye in photopic or scotopic vision. Results obtained through the comparison of data secured in both parts of this experiment indicate that insofar as the focus for the optimal wavelength of light in photopic vision is concerned, the retinoscopic method gives a measurement approximately 0.25 D. more plus using a white beam and 0.37 D. using the red beam. A difference of 0.12 D. was revealed between the white and red beams at normal light levels.

In the principal observer skiascopy was employed at the normal 20 Ft.-L. light level using the red beam, and after dark adaptations of 25 minutes, the measurements were repeated at .001, .00003, and .00001 Ft.-L. The amounts of night myopia at these three levels were respectively, 0.05 D., 1.00 D., and 1.62 D. None was manifested at the normal 20 Ft.-L. light level. In the same observer skiascopy was used at .004 Ft.-L. with dark adaptation of 0, 4, and 15 minutes. The relative myopia manifested was 0.00, 0.00, and 0.37 D. respectively. Four other subjects were given similar tests. With no dark adaptations pupils were of normal size and no relative myopia was manifested. At 4 minutes, pupils approached maximum dilation but no manifestation of night myopia was present. At 15 minutes, the extent of the effect varied within the group from 0.25 to 0.62 D. Large pupils, without dark adaptation, are in themselves, therefore, of no causative consequence. Dark adaptation is necessary before night myopia appears. A drop in light

level appears to increase the amount of the effect. About 0.3 D. must be added to the skiascopic findings in order to secure an approximation of the total effect, since red light skiascopy does not measure the full amount.

The second method was subjective in nature, based on stigmamometric measurements. The apparatus used was an instrument called an oculometer and was built by the American Optical Company under the direction of vision scientists at the Dartmouth Eye Institute. It is a type of optometer based on haploscopic principles with, however, important differences in construction and infinitely more complex. By moving small direct light source targets, covered by green filters whose wavelength was intended to correspond to the proper chromatic focus of the photopic image, the subject sees them most clearly at a point where they are conjugate with the retina when distance fixation obtains. This is a measure of the state of refraction of the eye and is read off directly from the scale (in diopters) along the arm on which the target is moved. Red filters were substituted for the green ones and measurements taken with them in place were compared with those obtained with the original green ones. Two observers were given 20 tests for each eye at the 20 Ft.-L. light level and at .004 Ft.-L.

The difference for Observer D, between original green and red stimulus targets was, for the right eye, 0.384 D. (more plus for the red) and for the left eye, 0.341 D. For Observer S these differences were respectively 0.388 and 0.358 D.

Measurements with the red targets were secured at .004 Ft.-L. after 20 minutes of dark adaptation, and compared with those at the normal 20 Ft.-L. light level. The amount of night myopia revealed at .004 Ft.-L. was:

Observer D: Right eye —— 0.174 D.	Left eye —— 0.277 D.
Observer S: Right eye —— 0.066 D.	Left eye —— 0.072 D.

These results indicated a smaller night myopia by the oculometric method than that found through use of the skiascope at the same light level. One reason for this may be that the stigmamometric technic measures the "hyperfocal interval" which is related to depth of focus and averages about —0.50 D. Were this factor absent or reduced in scotopic vision, the amount of night myopia revealed by this method would be correspondingly smaller. These data cannot be considered conclusive since the light level used in this part of the experiment was not very low (.004 Ft.-L.). Had it been possible at the time to make measurements with this technic at considerably lower light levels a greater amount of night myopia may have been revealed. Moreover, the possibility that the hyperfocal interval is operative, perhaps as a compensatory agent, in the final determination of night myopia cannot be dismissed since it is related to the part of the image caustic used by the eye and which may vary with large changes in brightness level.

Insofar as the skiascopic data are concerned, it appears that the

image in night myopia is in front of the retina although accommodation to eliminate spherical aberration is not ruled out. The amount of the effect increases with the drop in light level, and dark adaptation is essential for its onset. Pupillary size, per se, is not a factor. Since these experiments were of an exploratory nature, with limited data, the results obtained must be regarded with caution. 7 references. 1 table. —*Author's abstract.*

Tonicity Induced by Fusional Movements. *V. J. Ellerbrock, School of Optometry, Ohio State University, Columbus, Ohio.* Am. J. Optom. & Arch. Am. Acad. Optom. 27: 8–20, Jan. 1950.

Whenever the eyes are induced into vertical divergence, a residual tonicity from the test can be demonstrated for a period of time after the fusional stimuli have been removed. Since the length of time that these effects persist and the rate of their disappearance are not known, an experimental investigation of them was undertaken.

In order to induce the eyes into vertical divergence, an instrument was employed with which each eye fixated identical luminous circular disks. These disks were at a distance of three meters from the eye and subtended at an angle of 0.50° at the entrance pupils. For the inducement of a vertical divergence, the procedure was followed of increasing the separation of the disks in successful steps of 0.25°; however, the length of time that any given separation was presented and thus fixated varied in the different experiments. For the measurement of the vertical divergence of the eyes, two point of light sources were employed. The one which was seen by the right eye was fixed in the primary position of the plane of fixation, and the other was adjustable vertically. In order to control the torsional position of the eyes, cyclofusional targets, located above and below the circular disks were employed.

Two results deserve particular notice. The first is that the extent of vertical divergence of the eyes depends upon the rate of introduction of the vertical disparity. If the rate is high, the limit of vertical disparity of the eyes will be relatively low, and vice versa. The second observation to be emphasized is that the rate of disappearance of the tonicity which produces a divergent position of the eyes is not constant. The rate decreases with an increase in the length of time that a divergent position was maintained to a limit of several hours. Beyond this limit the rate at first remains relatively constant and then gradually increases. 19 references. 9 figures.—*Author's abstract.*

Variation of Visual Acuity with Various Test-Object Orientations and Viewing Conditions. *G. C. Higgins and K. Stultz, Kodak Research Laboratories, Eastman Kodak Company, Rochester, N. Y.* J. Optic Soc. America 40: 135–37, March 1950.

In a previous investigation (J. Optic Soc. America 38: 756, 1948), the authors had found a significantly higher visual acuity for parallel

line grid test objects oriented vertically or horizontally than for the same test objects oriented at 45° or 135°. It had been suggested that this phenomenon could be ascribed to preferential eye movements or damped oscillation of the eyes in vertical or horizontal directions.

These experiments tested the aforementioned hypothesis by the simple expedient of illuminating the test object by means of a flash from a Kodatron Speedlamp for only a thousandth of a second. This flash of short duration precluded the possibility of having judgments influenced by preferential eye movements. Again, the authors found that visual acuity for vertically or horizontally oriented lines was about 20% higher than for the same lines oriented in the 45th or 135th meridian, thus disproving the hypothesis that vertical or horizontal eye movements were responsible for the effect. The authors also tested the hypothesis that the anatomical location of the fovea (which is not on the optical axis of the eye, being located approximately 5° temporal to and 3½° below the position pole of the eye), might influence the visual acuity in different meridians. However, their data gave no conclusive evidence of the applicability of this hypothesis.—*Bernard Rosett.*

Absolute Thresholds and Night Myopia. *J. M. Otero, L. Plaza and F. Salavarri, Institute of Optics, "Daza de Valdes," Madrid, Spain.* J. Optic. Soc. America 39: 167–72, Feb. 1949.

Various phenomena associated with night myopia have been investigated during the last decade. An apparent myopia of approximately one diopter has been repeatedly observed under dark adaptation conditions. In 1943, V. Ronchi reported that when night myopia was corrected by the proper spectacles, many more stars could be seen than with the naked eye.

The authors measured the absolute thresholds of 4 subjects, each of whose night myopia was suitably corrected by spectacles. More than 50,000 determinations were made, so that statistical methods could be applied to the results. Each observer was emmetropic and dark adaptation was achieved in complete darkness for at least 30 minutes. Measurements were made with test fields which subtended angles from 30 seconds to 11 minutes for the fovea and for retinal zones 3°, 9° and 15° from the fovea. A 50% decrease in the absolute threshold was found when night myopia was compensated. This is reasonably explained by the fact that all the luminous flux distributed in the blurred image during normal uncorrected observation is constricted into a much smaller surface when the night myopia is corrected.—*Bernard Rosett.*

The Course of Foveal Light Adaptation Measured by the Threshold Intensity Increment. *Howard DeHaven Baker, Department of Psychology, Columbia University, New York, N. Y.* J. Optic Soc. America 39: 172–79, Feb. 1949.

Previous experiments in "light adaptation," the change in sensi-

tivity of an initially dark-adapted eye as the eye is exposed to light, have indicated initial high sensitivity decreasing progressively as illumination is prolonged. The author, defining sensitivity as the reciprocal of the barely perceptible intensity increment, finds that senvitivity is low immediately after the onset of the adapting light, and that it increases to a maximum in about three minutes, subsequently falling to a final, intermediate level.

An ingenious apparatus was used, enabling the presentation of brief flashes of intensity increments superimposed on bright backgrounds of known intensity. Since earlier experimenters used different definitions of sensitivity and different types of apparatus, their results are not comparable. The author also considers his experimental data in relation to neural processes in vision and chemical theories of photo-reception. He concludes that the fact that sensitivity reaches an early maximum does not coincide with simple theories of the visual cycle. Future correlation awaits determination of the mechanism and photochemical constants of the visual cycle.—*Bernard Rosett.*

Refractive Errors and Refractive Power. *J. I. Pascal.* Optometric World 38: 22–25, March 1950.

The effect of a correcting lens depends upon its position before the eye. The closer it is to the eye the more is its correcting effect due to an actual change of the total power of eye and lens. A convex lens increases the total power, but never to the full extent of its power; a concave lens diminishes the total power, but never to the full extent of its power. When placed in the "neutral" position, i.e., so that the second principal point of the lens coincides with the first principal focus of the eye, the power of lens and eye is equal to the power of the eye alone. The correcting effect is due entirely to the movement of the principal points of the eye. Beyond the "neutral" position a convex lens decreases the total power and a concave lens increases it. A simple formula is appended which gives the relation between the power of the correcting lens in front of the eye and the power of an imaginary lens inside the eye. The formula can be applied for the substitution even though the power of correcting lenses is expressed in vertex diopters and that of the imaginary lens in the eye is principal diopters.—*Robert E. Bannon.*

A Method for the Objective Measurement of Accommodation Speed of the Human Eye. *H. Kirchhof, Physiological Institute, University of Munich.* Translated by *Henry A. Knoll and Merrill J. Allen, School of Optometry, Ohio State University, Columbus, Ohio.* Am. J. Optom. & Arch. Am. Acad. Optom. 27: 163–69, April 1950.

Earlier methods for the measurement of accommodation speed are reviewed. A method is described for continuous recording of changes of accommodation by photographic recording of changes in the size of

the image formed by reflection at the front surface of the lens within the eye. The data indicate that the time required to increase the lens curvature by about 6 D. was 0.5 seconds; the time required to decrease the lens curvature the same amount was 0.426 seconds. These were the averaged values for three subjects with an aggregate total of 80 trials on increasing accommodation and of 78 trials on decreasing accommodation.

Fatigue of the ciliary muscle prolonged the far to near accommodation time up to 36%, but the accommodation time from near to far was practically unaffected. Eserine slowed the near to far accommodation to 4 seconds with only a slight decrease of the far to near accommodation time. Homatropine appreciably slowed the response of the lens during accommodation from far to near. 7 references. 8 figures. 2 tables.

The Response of the Intra-Ocular Muscles of the Dog and Cat to Electrical Stimulation. *Merrill J. Allen, School of Optometry, Ohio State University, Columbus, Ohio.* Am. J. Optom. & Arch. Am. Acad. Optom. 27: 287–93, June 1950.

Two methods for obtaining records of the response to electrical stimulation of the ciliary muscle of an enucleated eye are described: (1) motion picture photography of the pupil size, the third Purkinje image and the movement of a lever inserted into the ciliary muscle; (2) smoked drum recording of the movements of a light glass lever inserted into the ciliary muscle.

One electrode was attached to the optic nerve, and a small metallic ring which was used as a support for the posterior part of the eye was used as the other electrode. Data were obtained from the eye of a cat and a dog. The ciliary muscles of the cat and the dog were concluded to be multi-unit smooth muscle with a latent period between 100 and 250 msec. 11 references. 5 figures.—*Author's abstract.*

Diagnostic Methods of Examination, Biomicroscopy and Photography

The A. M. A. Method of Appraisal of Visual Efficiency. *Henry W. Hofstetter, Los Angeles College of Optometry, Los Angeles, Calif.* Am. J. Optom. & Arch. Am. Acad. Optom. 27: 55–63, Feb. 1950.

The method of appraisal of visual efficiency adopted by the American Medical Association is reveiwed and in part restated. The essential features of the method are incorporated in a general formula which lends itself to simple mathematical treatment. The general formula for visual efficiency may be stated as follows:

$$V.E. = 3P\frac{C_d + C_n}{8} + MP'\frac{C'_d + C'_n}{8}$$

in which

P and P' = The sum of the radial dimensions of the eight principal meridians of the visual field of the more efficient eye and the less efficient eye, respectively.

M = The ratio of the area of the motor field intact to the area of the normal motor field prescribed by the A. M. A.

C_d and C'_d = A. M. A. acuity-efficiency ratings for the distance vision of the more efficient eye and less efficient eye, respectively.

C_n and C'_n = A. M. A. acuity-efficiency ratings for the near (14") vision of the more efficient and less efficient eye, respectively.

C_d, C'_d, C_n, and C'_n may be computed from the Snellen fraction in accordance with the formula

$$C = \frac{\left(\frac{1}{S} - 1\right)}{0.836}$$

In which

S = the Snellen fraction for the given testing situation.

The attempt to restate the method of appraisal in mathematical terms brings out certain difficulties of interpretation of the intent of the committee formulating the method. 3 references. 1 figure. 2 tables. —*Author's abstract.*

Ocular Movements and Motor Anomalies, Nystagmus, Reading Disability

Problems in the Treatment of Strabismus. *A. L. Morgan.* Tr. Canadian Ophth. Soc. 22–33, 1949.

Under 5 years of age the diagnosis of strabismus is mostly objective. To decide what type of operation should be done it is necessary to find which muscles are at fault. Cases fall into five classes: (1) Convergence excess due to hyperopia. If the use of atropine straightens the eyes, glasses may hold them straight. Glasses are ordered after the age of 14 months. If they do not straighten the eyes in 6 months, then surgery is indicated and is done after the age of 2 years; (2) Congenital. These squints are structural in origin; the commonest type is due to constricting bands, running from the internal rectus to the medial wall of the orbit. Bilateral recession of the internal recti is done; (3) Paralytic. The commonest type is weakness of one or both superior recti with overaction of the inferior oblique of the other eye. The treatment is to re-

cess the inferior oblique 8 to 10 mm. at its insertion; (4) Combinations. Many cases have combinations of the first 3 types. The commonest example is a bilateral weakness of the superior recti, bilateral overaction of the inferior obliques plus a convergence excess. The best procedure is to do a bilateral recession of the obliques and a bilateral recession of the internal recti; (5) Divergent excess. When the child looks in the distance one or both eyes turn out. Convergence is good. The treatment is bilateral recession of the external recti.

For the treatment of the cases of squint in children over 5 years of age, surgery is combined with orthoptic training. Binocular vision cannot always be obtained even though the eyes are cosmetically straight. All surgical procedures are done under ether anesthesia given through an intratracheal tube. Both eyes are prepared. The eyeballs are rotated by grasping them with thumb forceps to see if there is any overdevelopment of checked ligaments. A rectus muscle should never be shortened unless the opposite muscle in the same eye is lengthened. The internal rectus should never be receded more than 5 mm. or the external rectus more than 6 mm. 7 figures.

Balancing Visual Stimuli in Orthoptic Training. *Matthew Luckiesh, R. M. Hall and S. K. Guth, Cleveland, Ohio.* Am. J. Optom. & Arch. Am. Acad. Optom. 27: 3–7, Jan. 1950.

The authors describe a new technic for controlling the visibility of objects viewed through orthoptic instruments by simultaneously changing the brightness and contrast of the target. A circular colorless filter with a precise gradient of density is placed before the dominant eye and is adjusted until suppression of that eye occurs and fixation is transferred to the squinting or non-dominant eye. Binocular vision is attained by adjusting: (1) the size of the targets; (2) the amounts of prismatic power, or (3) the density of the filter before the dominant eye. Training is then conducted in the ordinary manner. As the visual efficiency of the non-dominant eye increases, the density of the filter before the dominant eye is progressively reduced. The technic has been used extensively in clinical practice and has proved to be effective in obtaining single binocular vision in many cases which failed to respond to other methods of control. 5 references. 3 figures.—*Author's abstract.*

Readiness and Emotional Problems Associated with Reading Disabilities. *Wilmot F. Schneider, Shaker Heights, Ohio.* Am. J. Optom. & Arch. Am. Acad. Optom. 10: 413–26, Oct. 1949.

During the last 20 years it appears that learning to read has become an increasingly difficult problem for approximately 25% of our school children. Before the emotional frustration associated with a reading disability has reached the point where a psychiatrist must be consulted,

the eye doctor, family doctor or school authority must consider any physical component which may contribute to this disability. Too often the cursory examination with the simple eye chart overlooks the hyperopic astigmatism, the eye muscle imbalance, the confused laterality, or central imagery problem.

Delinquent behavior, antisociality or severe somatic complaints (headaches, "belly aches," "nervousness," poor sleeping) may well arise from emotional frustration associated with the reading failure. Such abnormalities as alternating strabismus, central suppression of imagery, crossed dominance of hand-eyedness can contribute to the lack of readiness for reading or to the speech or muscle incoordination problem. There must be the earliest recognition of such defects in order to guide the educator: (1) when a particular child should be exposed to reading; (2) what method of reading approach may be best suited to the individual child; (3) what remedial reading methods (tutor, orthoptics, psychiatrist or some combination of this team) must be used when the child has failed with regular class technics. A great deal of "preventive mental hygiene" lies in the clear understanding of the dynamic eye functioning.—*Author's Abstract.*

Differential Diagnosis of Pareses of Superior Oblique and Superior Rectus Muscles. *Peter J. Giotta, St. Albans, N. Y.* Arch. Ophth. 43: 1–8, Jan. 1950.

The problem of differential diagnosis in this group of cases is discussed and resolves itself into the premise that the head tilt could be due to a primary paralysis of the superior oblique in the hypertrophic eye—or to an overaction of the inferior oblique in the same hypertrophic eye, which overaction is predicted as being due to initial palsy of the contralateral superior rectus.

Six cases are presented. In the first case there was no head tilt; the deviation with the hypotrophic eye fixing was greater than with the other eye fixing, and the results of the head tilt test were negative. All these findings agree with a diagnosis of superior rectus palsy of the hypotrophic eye. On the other hand, the other 5 patients—with one exception that showed suppression—had a definite head tilt; the deviation was greater when fixing with the hypertrophic eye and the findings of the head tilt test were positive. It is noted that a consistent higher deviation with the hypertrophic eye fixing—something that seems to have been neglected in the argument concerning the primary etiology of these cases—is of importance in establishing the diagnosis as being due to superior oblique palsy. This directly substantiates the findings of the head tilt test as being due to superior oblique palsy in the hypertrophic eye and not to inferior oblique overaction in the same eye. To hold that the head tilt and head tilt test findings were due to

overaction of the inferior oblique, then such an overaction should show primary deviation, i.e., hypotrophic eye fixing, to be consistently greater than hypertrophic eye fixing. All the patients had single binocular macular vision with stereopsis and it is suggested that some of the confusion in the literature may be due to working with patients who had some amblyopia.

The method used to elicit primary and secondary deviation was essentially the macular-macular red glass test using the tangent cross as described by Bielschowsky. It is noted in the paper that macular-paramacular tests were not too satisfactory in bringing out a consistent difference in primary and secondary deviation. A simple method for performing the head tilt test with a hand stereoscope is described. 9 references. 1 figure.—*Author's Abstract.*

Further Contributions to the Surgical Treatment of Non-Paretic Vertical Strabismus (*Weiter Beitrage zur operativen Behandlung des nichtparetischen Höhenschielens*). *A. Meesmann, Kiel, Germany.* Arch.f. Ophth. 149: 503–19, Heft 6, 1949.

The surgical treatment of vertical strabismus has not attained the popularity it deserves. A review of the new theoretical and practical aspects of the problem is presented to simplify diagnosis and surgical indications, together with a detailed report of results of operation in 100 patients. Vertical deviation constitutes the determining factor as regards indication for myectomy. The most commonly employed operation is myectomy of the inferior oblique, and this is the method of choice in strabismus of the sursoadductorius type. If the effect is inadequate a compensatory adjustment of the rectus inferior of the other eye can be undertaken. In cases of alternating vertical strabismus a bilateral myectomy can be done in a single sitting. Landolt's technic is preferable to White's operation which is more difficult technically and involves greater danger of complications. Strabismus deorsum vergens abductorius is likewise best operated on, the leading eye with myectomy of the inferior obliquus supplemented in the anatomic stage by compensatory adjustment of the rectus inferior. When there exists a strabismus sursum vergens totalis, myectomy will not suffice. In a second stage it will be necessary to advance the rectus inferior and withdraw the rectus superior. Simultaneous operation on both vertical motors is preferable with sutures which can be regulated to govern the distance between the previous insertion of the tendon and the severed muscle. The same operation on both vertical motor recti will serve to correct strabismus sursoadductorius.

In cases of coincident horizontal strabismus, it is often difficult to determine the best sequence for the operative steps.

In the presence of considerable convergence, a myectomy of O I

and tenotomy in one stage has proved successful in many cases. In young children when narcosis is required, division of the tarso-orbital fascia at the internal inferior margin of the orbit may cause severe hemorrhage from the intraorbital artery with formation of a large hematoma, which may displace the eyeball upward for several days. With isolated myectomy this does not occur, but there may be some delay in healing of the rectus internus with danger of lasting weakness of adduction. This will necessitate renewed suture of the R I a few days later. For this reason the double operation is recommended only in cases in which local anesthesia is possible. After tenotomy a slight strabismus sursoadductorius of the rectus internus does not tend to disappear as formerly believed but becomes more pronounced so that myectomy of the O I cannot be avoided. The same is true in the case of alternating strabismus of different degree in the two eyes. After myectomy on the more markedly deviating eye, the deviation on the other eye becomes more pronounced. Therefore it is better to operate on both eyes in one sitting. Operation for vertical strabismus should be done between the third and fifth year of life. American writers have even recommended operation during the first year.

In older patients in the anatomically fixed stage, the effect of myectomy is usually slight and compensatory adjustment of the R I should preferably be combined with advancement of the R S. In the present series of cases unilateral myectomy was performed in 72 cases and bilateral myectomy in 28 cases. The results approximated normal in 6 cases, showed marked improvement in 31 cases, insignificant improvement in 45 cases and no improvement in 18 cases. In no case was previously binocular vision destroyed. 13 references. 7 tables.

Bilateral Paralysis of External Rectus Muscle in Hypertelorism. Report of a Case with Convergent Strabismus. *A. E. Meisenback, Jr., Dallas, Tex.* Am. J. Ophth. 33: 83–87, Jan. 1950.

Alexander Brown and R. Kemp Harper list the craniofacial dysostoses under the following headings: (1) oxycephaly; (2) scaphocephaly; (3) plagiocephaly; (4) trigonocephaly; (5) platycephaly; (6) craniolacunia; (7) hypertelorism. Greg first used the term hypertelorism in 1924 to describe an undue separation between two paired organs. Abnormal development of the lesser wings of the sphenoid bone is frequently found, although cases have been reported in which there is no abnormality in these bones.

Poor ocular movements, impaired binocular vision, abnormalities of the mouth, palate and gums may occur, as well as mental retardation. Mention is made of the wide variety of surgical procedures advocated as well as the undesirable complications of enophthalmos and astigmatism in the oblique axes.

The author reports one case with surgical procedures and final results in a 5-year-old child who is a true alternator with a marked esotropia and an overaction of the left inferior oblique. Surgical intervention consisted of recession of the internal rectus of the right eye 7 mm., with a 12 mm. resection and 2 mm. advancement of the externus. The Hümmelsheim procedure was used on the superior and inferior recti. Eight months later the left eye was operated on using the same procedure, recessing the internus 5 mm., transplanting the outer halves of the superior and inferior recti and resecting the externus 5 mm. and advancing it 2 mm. On the last visit four months later the eyes were orthophoric for distance and near with a +1.00 D. sph. O.U. and a visual acuity of 20/20 bilateral. Lateral rotation was approximately 10 to 15 degrees right and 20 to 25 degrees left. There was a residual hypertropia only on extreme lateral gaze. An abnormal insertion of the internal rectus 3 mm. from the cornea as well as a marked atrophy of both external recti were the unusual anatomical findings at surgery. Postoperative complications consisted only of a moderate enophthalmos of the right eye which disappeared after two to three months, and a marked postoperative chemosis at the time of the second operation. X-rays of the skull did not show any abnormal development or separation of lesser wings of the sphenoid bones. 6 references. 5 figures.—*Author's Abstract.*

Anomalies of Refraction and Accommodation, Contact Lens

A Progress Report on Plastic Ophthalmic Lenses. *Roy Marks, Univis Lens Co., Dayton, Ohio.* Am. J. Optom. & Arch. Am. Acad. Optom. 27: 242–50, May 1950.

An attempt has been made to report on the progress of ophthalmic plastic lenses and to explain some of the problems encountered in the research currently being done. An explanation is offered as to what causes plastic lenses to scratch, what is used in testing them, and also what represents the best conditions under which plastic lenses can be chemically produced. Of interest will be the results of the first comprehensive, controlled field test on plastic lenses, made under the supervision of the author. Much has been claimed for plastic lenses in the past and it is the author's opinion that no lens is yet marketable that will satisfy general ophthalmic specifications, and he explains in part why this is so.—*Author's abstract.*

The Corneal Lens. *Harold S. Harris, Bellflower, Calif.* Am. J. Optom. & Arch. Am. Acad. Optom. 27: 64–87, Feb. 1950.

This paper is a didactic presentation of corneal lens principles. The writer made observations on several hundred patients at the

Solex Laboratories, Inc., Los Angeles, California. From these observations a systematized fitting procedure was formulated. The basic theory underlying the corneal lens is a significant departure from that governing the conventional contact lens. The device is discussed under the following headings: (1) physical concepts; (2) physiological concepts; (3) optical concepts; (4) fitting procedure; (5) discussion; (6) miscellaneous notes; (7) conclusion. The lens is a small, thin meniscus of plastic which floats on the cornea and adheres to the eye because of surface tension. It is sufficiently loose to permit a continuous free flow of lacrimal fluid between the eye and lens. The upper lid centers the lens in the blinking process. Both the lids and the cornea adapt to the presence of the lens.

Three findings, the spectacle prescription, the vertex distance, and the opthalmometer measurement of corneal curves are necessary. The lens is fitted initially on the basis of the ophthalmometer readings, i.e., a lens is chosen whose ocular curve has a radius 0.3 mm. longer than the longest radius of curvature of the cornea. Observations are made regarding objective signs and subjective symptomatology. The objective signs are: lens position, lens movement, lateral lag of the lens and bubble formation. The subjective symptoms are: lid sensation, stinging and burning, lacrimation and corneal fogging. True corneal fogging, per se, does not occur if the lens is properly fitted and the wearing time is not increased too rapidly. The lens is contraindicated in the following: active corneal pathologic factors, poor patient cooperation and those conical corneas predisposed to apical abrasion, where appreciable degrees of residual astigmatism persist, and where prism is required. The lens is indicated in the majority of contact lens patients. Of those patients now wearing the lens, 30 to 40% wear their lenses all their waking hours, 30 to 40% have a limited wearing time of 5 to 10 hours and 30 to 40% are increasing their wearing time; 3% of the total are keratoconus cases. Additional research is indicated on the corneal lens. 8 references. 13 figures.—*Author's abstract.*

Variations in Visual Acuity of a Group Without Major Refractive Errors. *Newell C. Kephart and Joseph W. Wissel, Occupational Research Center, Purdue University, Lafayette, Ind.* Am. J. Optom. & Arch. Am. Acad. Optom. 27: 95–99, Feb. 1950.

The study involved 57 subjects, 41 males and 16 females. The mean age of the group was 21.4 years with a range of 17 to 31 years. Each subject was tested on the Ortho-Rater using the F-4, F-5, N-2 and N-3 acuity tests which were administered occluded. Subjects were classified according to severity of refractive error by means of a retinoscopic examination made by a professional optometrist. Scores of subjects with less than three-quarters of a diopter of any type error were re-

tained. Means and measures of dispersion are presented for all six acuity tests. Sigma values computed from percentage of subjects passing each target level were plotted against the target values. By graphic means the line of best fit to the plotted points appeared to be a straight line. This was confirmed by statistical methods.

Findings reported were that visual acuity varied widely in this selected group and that visual acuity, as measured by this instrument, varied normally in a group without major refractive errors. The distributions resembled those found for a large unselected population. 1 figure. 3 tables.—*Author's abstract.*

A Clinical Study of Trifocal Lenses. *James H. Grout, Northern Illinois College of Optometry, Chicago, Ill.* Am. J. Optom. & Arch. Am. Acad. Optom. 27: 140–47, March 1950.

This study of trifocal lenses first presents data on the relationship between the need of this type lens and certain findings such as bifocal "add," distance lens prescription, phorias at far and near, and amplitude of accommodation. It is a first conclusion that these observations are in themselves not significant in the selection of a trifocal case. The second part of the paper is an analysis of case histories as to occupational factor. A number of occupations is listed with the typical visual complaints common to these occupations as elicited from the patient, and a means of solving these problems through the use of trifocal lenses is presented. It is our conclusion that a great many people who now wear bifocals would be better satisfied and be able to do an easier job of seeing if trifocals were worn. It is also recommended that careful case histories and questioning are of great importance in the screening of trifocal cases. Furthermore, time taken for proper indoctrination into their use, advantages and limitations is considered most important.—*Author's abstract.*

Serving the Difficult Presbyopic Patient with Bifocals. *Hugh V. Brown, Berkeley, Calif.* Am. J. Optom. & Arch. Am. Acad. Optom. 27: 187–90, April 1950.

The psychological phase of prescribing bifocals in optometric care considers at least 4 types of patients. They will be expected to have varied degrees of difficulty. The classes include: the philosophic type, the indifferent type, the exacting type, and the hysterical type. No attempt is made in the article to suggest or recommend a particular kind of multifocal or bifocal lens for each type. Economic factors impose an additional consideration that has not been discussed. Recommendation is made that bifocal prescribing be delayed if there is more than a reasonable doubt of successful results.—*Author's abstract.*

Conjunctiva

Stevens-Johnson Syndrome. *I. C. Isdale, Christchurch, New Zealand.* New Zealand M. J. 48: 478–82, Oct. 1949.

The author gives a full account of a case of Stevens-Johnson syndrome ending fatally in a man 43 years of age. Two days after complaining of a sore throat he was admitted to the hospital with a generalized exanthem and enanthem of the eyes, mouth, and urethra. He became progressively worse, with copious sputum increasingly blood-stained and the bullous exanthem much more extensive and severe. He died on the seventh day after admission. The eyes showed mucopurulent conjunctivitis with clear corneas. Throat culture revealed Streptococcus viridans to be the predominant organism. There were no Vincent's organisms or C. diphtheriae. The Wassermann, Klein, and Kahn reactions were negative.

The postmortem findings are described and the etiology, differential diagnosis, and treatment are discussed. 10 references. 2 figures.—*Howard Coverdale.*

It seems quite clear now that the Stevens-Johnson syndrome is a severe form of erythema multiforme, with purulent or membranous conjunctivitis, and not an independent entity. The name should be abandoned to avoid confusion and all cases should be referred to as erythema multiforme with conjunctivitis.—Editor.

Stevens-Johnson Syndrome: Report of a Case. *J. O'D. Alexander, Glasgow, Scotland.* Glasgow M. J. 30: 455–57, Dec. 1949.

A boy 3½ years of age had painful hands and feet four weeks after the appearance of a left-sided cervical swelling which was diagnosed as mumps. Two days later erythema, which became bullous after one week, appeared in these areas, accompanied by mouth ulceration and conjunctival discharge. On admission there was circumoral erythema and hemorrhagic crusts on the lips. There were circular, whitish, aphthous ulcers one inch in diameter on cheeks, palate, and tongue; there were scattered follicular papules on the chest and anterior side of the abdomen, and there was bilateral blepharitis and purulent conjunctivitis. The upper limbs were bright red and studded with vesicles and bullae from shoulder to finger tips. Similar lesions were scattered over the legs and feet. Two small purulent preputial ulcers were present.

Staphylococcus aureus was isolated from the conjunctival discharge and from the mouth and preputial ulcers. The bullae were sterile. The white cell count was 21,000 (89% polymorphonuclear leukocytes), and the red cell count 2,500,000 per cu. mm.

Mild pyrexia persisted for 5 weeks. Most of the lesions cleared

up in that time but the last lesion persisted until 4½ months after onset. Treatment consisted of oral penicillin, 40,000 units every 4 hours for 2 weeks. Local applications of soft paraffin, succeeded by 2% ichthyol and calamine liniment, were made. During convalescence multiple vitamins and ferrous sulfate were given. Interesting features were: (1) the mild febrile reaction (100.6° F. was the maximum recorded temperature); (2) the confluent lesions on the arm; (3) the mild recrudescences over a period of 4 months; (4) the unusual follicular papular eruption on the chest and abdomen; (5) the severity of the oral lesions, and (6) the mildness of the eye symptoms. Antecedent history of mumps is not uncommon. The patient's mother and sister each had a "quinsy" throat 3 weeks previously. 6 references.—*Author's abstract.*

Some Conjunctival Affections. *Roland P. Wilson.* Ophth. Soc. New Zealand, 1948.

Conjunctival conditions which are epidemic and pandemic in Eastern lands appear in New Zealand, especially amongst the Maoris. The author discusses these conditions under three headings, as follows:

1. Bacterial conjunctivitis. Morax-Axenfeld conjunctivitis may occur in various degrees of chronicity and may even assume an acute form. Frequently the typical features are absent and the cause may be missed. The diplobacilli are difficult to grow in culture and it is wise to use plenty of inoculum or a good loopful of pus on a slide. It is not true that very young children are exempt from Koch-Weeks infection. In Egypt the maximum incidence is in infancy and it falls sharply thereafter. Although the conjunctiva usually teems with bacilli, they are very slender and require a good counter-stain. This infection resists penicillin therapy but responds to the "sulfa" group except sulfanilamide. Epidemic conjunctivitis in Egypt caused about 80% of blindness at the beginning of this century, affecting 1 in every 6 persons in one or both eyes. This incidence has been reduced to one in 16 now, with acute gonococcal ophthalmia the most frequent cause. The infection spreads from eye to eye rather than venereally. Ophthalmia neonatorum is exceedingly rare in Port Said. The epidemics depend primarily on temperature and flies. The gonococcal epidemic begins as soon as daily temperatures reach 90° F., and there is a sharp decline in flies and conjunctivitis when 95° F. is exceeded. Late in the summer there is a return of both when daily maximum temperatures fall below 72° F. Trachoma frequently develops soon after an acute attack of ophthalmia has subsided.

2. Follicular diseases. Follicles are a natural reaction to conjunctival irritation. The momentous epidemic among Napoleon's troops in 1801 was due to the Koch-Weeks bacillus. Not more than 1% of blindness in Egypt is due to trachoma although 95% of the indigenous

population is infected. Trachoma is of low infectivity and flourishes only in bad conditions. It is caused by a filterable virus which is represented in the epithelial cell inclusions. This virus may form a biological link between the rickettsiae and the large viruses. It can be routed through at least four monkey passages and finally on to the human conjunctiva to produce genuine trachoma with typical inclusions. The absence of demonstrable inclusions in the monkey is a mystery. Intracellular inclusions tend to disappear at a very early stage in the evolution of the disease. They can be found in all early cases but after six months it is difficult to demonstrate them. Therefore, clinically, a case of some standing cannot be classed as nontrachomatous because inclusions are absent. To prevent spread of infection, patients must be treated early and by segregation if possible. Trachoma follicles are found on the tarsus, and when of the sago-grain type they rupture easily. Neither of these findings is present in folliculosis. No matter what stage the disease is in, a diagnosis of trachoma cannot be made if there are no signs of corneal infiltration or vascularization. The most significant sign at the beginning of the disease is the narrow band of raised limbal edema skirting the upper half and sometimes extending around the cornea. This means trachoma. Widening of the end capillary loop zone should always be regarded as pathological. The author designates the groove where this zone and the vascular loop zone join as the "secondary limbal groove." In the initial stage, intracellular inclusions will show by Giemsa stain in 100% of cases. The follicles of MacCallan's stages I and II are described. Herbert's pits are a late but pathognomonic sign of trachoma. The author discusses the follicles in folliculosis and follicular conjunctivitis. The conjunctiva may react to different stimuli in two ways: (a) by diffuse infiltration of the lamina propria with cells or exudate. This may be acute or chronic. If the latter, a velvety papillary hypertrophy and new vessel formation will appear; (b) by lymphoid hyperplasia. In folliculosis the conjunctiva appears normal to the naked eye apart from follicles because (a) is absent. In follicular conjunctivitis (a) and (b) are present. The follicles in simple folliculosis are true, newly formed lymph nodes which can develop in any part of the loose connective tissue in the adult organism. Only the follicles of early trachoma, and rarely those of swimming bath conjunctivitis, appear as tiny, flat, yellowish, avascular areas on the tarsus. The author holds that in no patient examined during the first six months of its course can a diagnosis of trachoma be made unless typical inclusion bodies are present. Good epithelial scrapings containing many cells and no blood should be examined by an experienced observer.

3. Allergic diseases. Spring catarrh, although common in Egypt, is rare in New Zealand. The author describes a mild type which may develop into the text-book type. Excessive ultra-violet light may

cause this mild type. In spring catarrh and allergic conjunctivitis the upper tarsal conjunctiva always presents a pathognomonic sign: an unusually glistening appearance and a glass-like, tenacious film which can be stretched out from the conjunctiva, with a repositor, often for an inch before it snaps. The all-important feature of these conditions is the abnormal exudation of fibrin and wandering cells from certain groups of conjunctival capillaries and is not the usually described fibrous hyperplasia, hyaline degeneration, and epithelial proliferation. The exudate is in the form of homogeneous trabeculae separating normal tissue elements. Van Gieson's stain reveals the absence of connective tissue and Wiegert's stain shows the "hyaline" material to be fibrin. A sheet of fibrin forms the glistening membrane referred to. No bleeding follows its removal and a few moments later tiny droplets are seen to coalesce to replace it. This occurs because the conjunctiva is so firmly adherent to the tarsus that it cannot accommodate all the fibrin which is constantly exuding from the capillaries.—*J. Ringland Anderson.*

By virtue of his long experience in Egypt as Director of the Giza Memorial Ophthalmic Laboratory, Wilson writes with special authority on conjunctival and corneal infections. His comments on trachoma are of importance particularly in regard to the early signs at the upper limbus. In discussing vernal catarrh he corrects the popular misconception that fibrous hyperplasia is prominent in the disease and emphasizes the fact that an abnormal permeability of the capillary bed, particularly in the upper tarsal conjunctiva, with passage of fibrin into the tissues, is the essential lesion.—EDITOR.

Acute Conjunctivitis Caused by Hemophilus. *Dorland J. Davis and Margaret Pittman, Bethesda, Md.* Am. J. Dis. Child. 79: 211–22. Feb. 1950.

A severe form of acute conjunctivitis, characterized by vascular injection, purulent exudate, pain, and often palpebral edema, was observed in the lower Rio Grande Valley of Texas. Infants and children were attacked more commonly than adults, and there was a high familial incidence. The principal cause of the infection was the Koch-Weeks bacillus, although a number of attacks were caused by Hemophilus influenzae. These two species can now be differentiated. Conjunctivitis caused by H. influenzae only was observed in the vicinity of Washington, D. C. This disease caused by both organisms responded well to streptomycin therapy and also to zinc sulfate therapy, as judged by subsequent clinical improvement and bacterial cultures negative for the organisms. 7 references. 5 tables.—*Author's abstract.*

It is of interest that these authors distinguish sharply between the influenza bacillus (H. influenzae) and the Koch-Weeks bacillus (H.

conjunctivitidis) and offer clear-cut bacteriological evidence to support the differentiation. This differentiation has long been made by ophthalmologists on clinical grounds and on the basis of differences in the morphology of the organisms in exudate smears, but general bacteriologists have been inclined to consider the two organisms as identical.—EDITOR.

Stevens-Johnson Disease. *William P. Barba, II, and Arthur M. Tyson, Jacksonville, Fla.* U. S. Armed Forces M. J. 1: 39–45, Jan. 1950.

Stevens-Johnson disease should be termed Stevens-Johnson syndrome, a manifestation of erythema multiforme. It is a severe systemic condition whose manifestations are primarily protean. The onset is characterized by insidious stomatitis and ophthalmia which are followed by an eruption and a variety of systemic reactions. The course of the disease has been uninfluenced by therapy but the secondary complications are well controlled by antibacterial and supportive therapy.

The ophthalmia usually occurs as a catarrhal conjunctivitis, a purulent conjunctivitis, or a membranous conjunctivitis. The oral lesions start as vesicles which ulcerate. The lesions may extend into the tracheobronchial tree and/or the esophagus. The skin eruption starts as erythematous macules with a marked tendency to periorificial concentration. The macules may become vesicular, bullous, or hemorrhagic. Temperatures may be high or low. The systemic symptoms vary from headache to marked prostration. Positive electrocardiographic and chest x-ray findings are reported. The syndrome occurs primarily in the spring and fall, affecting five men to one woman. The duration varies from 5 to 86 days. All ages have been affected. The peripheral blood may show a leukopenia or leukemoid reaction. Severe gastrointestinal and genitourinary symptoms have been reported.

Ocular complications are common. Therapy is supportive and directed toward preventing complications. Penicillin is of proven value in reducing secondary complications of skin or eyes. It should be given parenterally and locally. The pupils should be dilated. The value of the antihistaminic drugs has not been established but they seemed to influence favorably the course of the case reported in this paper and should be used until such time as their value has been definitely established since the disease presents a picture of antigen-antibody reaction. The etiology is unknown although a variety of factors has been suspected.

A case of Stevens-Johnson syndrome in a 5-year-old white girl is reported. There was a cervical adenitis followed by marked fever, conjunctivitis, stomatitis, and an erythematous macular eruption, most concentrated in the periorificial areas. Temperatures ranged from 100° F. to 105° F. The patient had marked pain in her extremities and devel-

oped an inflammatory arthritis. Treatment was supportive, antibacterial, and antihistaminic. Recovery began after a transfusion reaction. The hospital stay was 16 days. There were no severe complications.—*Author's abstract.*

Cornea, Sclera and Tenon's Capsule

A Contribution to the Treatment of Corneal Ulcers, Especially Serpiginous Ulcers (*Une contribution au traitement des ulcérations cornéennes particulièrement de l'ulcère serpigineux*). *Albert Stein, Saint Gall, Switzerland.* Arch. d'ophthal. 9: 722–31, Nov.–Dec. 1949.

A description is given of the treatment of corneal ulcers with penicillin by a combination of two methods, iontophoresis and a continuous bath. An especially designed eye cup is employed that can be fitted to the eye of any patient. For iontophoresis this eye cup contains a zinc electrode of T shape, connected by a thin wire to the negative pole. A solution of 25,000 units of penicillin G in 10 cc. of distilled water is employed. The current is turned on gradually until the patient has a slight sensation of pricking or burning in the eye, then the intensity of the current is reduced until the iontophoresis is entirely painless; usually a current of $\frac{3}{4}$ to 2 ma. is employed. Treatments are given twice a day until all severe infiltration disappears. These treatments are supplemented by a continuous bath, with 20,000 to 40,000 units (i.e., 2 to 4 cc. of penicillin G, Roche), to which is added 8 to 6 cc. of artificial tears (Ophtalmiso 8). The solution is placed in the special eye cup, which is adjusted so that it can be worn by the patient, held in place by a light rubber band. It is worn without discomfort for six to eight hours, removed for a time while a mydriatic is instilled, and then replaced. Atropine may be added to the penicillin bath without diminishing the activity of the penicillin.

This combined method of penicillin therapy has been used in 27 cases of corneal ulcer, 16 of which were serpiginous ulcers. Bacteriological examination showed penicillin-sensitive organisms in scrapings from the ulcer and the conjunctiva in all cases. After beginning treatment, there was no further extension of the ulcer or of the infiltration; the ulcer healed rapidly with good epithelization. The hypopyon was rapidly absorbed, and the iritis and associated exudation in the anterior chamber regressed. The remaining scar was always of less extent than the original lesion; and even in the case of central ulcers, the visual results were, on the average, very satisfactory. In the 16 cases of serpiginous ulcer, the combined method was always employed; in the 11 other cases the continuous bath was sometimes sufficient to obtain healing. Iontophoresis was also employed in 3 of these cases. 10 references. 5 figures. 2 tables.

A Recent Epidemic of Keratoconjunctivitis in the Region of Paris (*A propos de la récente épidémie de kératо-conjonctivite de la région parisienne*). *René Corréard and Pierre Plesssier, Hôpital Laribosière, Paris.* Ann. d'ocul. 182: 859-63, Nov. 1949.

During an epidemic of keratoconjunctivitis occurring in an important industrial establishment in the region of Paris, the condition was found to be due to the virus isolated by Sanders during similar epidemics of keratoconjunctivitis in industrial plants in the United States during the war. In their study of a large number of cases during this epidemic, the authors found that the first symptom was the feeling of a foreign body in the eye, often accompanied by a slight redness of the conjunctiva; this was followed by marked edema of the upper eyelid and chemosis, then by a lesser degree of edema of the lower eyelid. About the third day one of the glands in front of the ear or in the submaxillary region became enlarged. Toward the fifth day the edema of the lower lid became less, but that of the upper lid and the chemosis increased. About the ninth day on the average, the nodular lesions in the cornea appeared, preceded by a flow of tears and photophobia of varying degrees. The vision was diminished at that time and continued so until the lesions healed—often a matter of months. If effective treatment was given in the first few days, keratitis could be entirely avoided or its severity could be much reduced. Penicillin is not effective; sulfonamides are not of value unless there is some secondary infection. Treatment with convalescent serum is effective, but this may be difficult to obtain; it must be taken from a patient who shows the typical corneal lesions four to six weeks after onset of the disease. To be effective in preventing keratitis, the administration of convalescent serum must be begun by the fifth day. The authors used large doses—50 cc. for adults—given by intramuscular injection. Aureomycin was available in small quantities and was used in only a few cases. It was given by instillations into the eye every hour. The aureomycin solution, even if kept in the icebox, cannot be kept for more than 72 hours. In the few patients treated, the conjunctivitis did not always subside rapidly, but keratitis appeared to be avoided if treatment was begun early. 7 references.

Recurring and Corneoscleral Varicella. *G. M. H. Veeneklass, Utrecht, Holland.* Ophthalmologica 119: 96-98, Feb. 1950.

In a family with 3 children, the youngest child, when 7 months of age, developed typical varicella at a time when cases of the disease were occurring in the neighborhood. Neither of the other 2 children developed varicella at this time. About two months later, this child showed a recurrence of equally typical varicella after contact with a known case of the disease, and shortly after being vaccinated against smallpox. At about the same time, in the oldest child, 5 years of age, who had been

in contact with the same case, varicella developed with typical symptoms except that a typical vesicle developed on the limbus cornea of the right eye, with a vascular band extending toward the medial corner of the eye. This vesicle flattened out into a small dark spot; the vascular band persisted for a longer time, and three years later a remnant of it still remained in the form of a small, slightly raised stripe. In the other child in the family (2½ years of age) varicella developed about ten days after the oldest child; the disease ran a typical course except that a vesicle also developed on the limbus cornea of the right eye. Since vesicles on the limbus cornea are unusual in varicella, their occurrence in 2 children of the same family suggests a hereditary disposition. 1 figure.

Effects of Metabolic Poisons and of Some Other Agents on Intercellular Cohesion in Corneal Epithelium. *Wilhelm Buschke, New York, N. Y.* Am. J. Ophth. 33: 59–68, Jan. 1950.

Intercellular cohesion of the corneal epithelium was tested by shearing scraped-off epithelium between slides under microscopic observation. Chemical agents to be tested for their influence on cell cohesion were injected into the corneal stroma, and the whole corneas were then incubated in a moist chamber for various lengths of time and under various temperatures, prior to removal of the epithelium for the cohesion test. Fluoride, iodoacetate, iodoacetamide, 2, 4-dinitrophenol and some local anesthetics produced loss of cell cohesion if the tissue was incubated for 6 hours at 38° C. With similar incubation, cyanide, malonate, azide, and some other agents did not induce loss of cohesion. Quinone and trinitrophenol brought about cell isolation with shorter incubation at room temperature, with the test methods used. Beta-glucuronidase failed to induce loss of cell cohesion. Problems of specificity of action in connection with dosage levels of the applied agents, site of action, and possible relation to proteolytic activity in the tissue are discussed. 14 references. 11 figures. 1 table.—*Author's abstract.*

Keratitis as a Late Sequel of Mustard Gas Exposure; Treatment with Conjunctival Grafts (*Les kératites tardives par ypérite; Traitement par la greffe de conjonctiva*). *Gabriel-Pierre Sourdille, Nantes, France.* Ophthalmologica 118: 893–98, Oct.–Nov. 1949.

A report is given of 13 cases of keratitis occurring as a late sequel of mustard gas burns in World War I. A study of these cases, with a brief review of the literature, indicates that the keratitis is secondary to ischemic lesions of the conjunctiva at the limbus near the palpebral fissure. On this basis, the best treatment consists in replacing the conjunctiva in which sclerosis resulted from the burn by a flap from the neighboring conjunctiva, or by a conjunctival graft from the upper fornix, which is usually not injured by mustard gas. 8 references. 7 figures.

The Prognosis of Corneal Grafts (*Le pronostic des greffes cornéennes*). *A. Franceschetti and V. Bischler, University of Geneva, Switzerland.* Ophthalmologica 118: 969, Oct.–Nov. 1949.

The corneal grafts employed are taken from cadavers, preferably within an hour after death; they have all been obtained from adults. Grafts are never taken from a case of infectious disease. Each graft is preserved in a glass tube with a piston so that it can be deposited on a metal spatula and transferred to the patient without contact with any other instrument.

In 129 cases in which corneal grafts have been done, the best results, with satisfactory healing of the graft and improvement in vision in practically 100%, were obtained in cases of degenerative lesions of the cornea, scrofulous keratitis, and corneal opacity resulting from glaucoma. To obtain these results it is sometimes necessary to make a second graft if the first becomes opaque. In lesions of the cornea produced by chemical burns and other types of severe trauma, the graft usually became opaque. In other forms of keratitis, interstitial keratitis and infectious keratitis, including virus keratitis—a transparent graft was obtained in about 50% of cases. The prognosis of corneal grafts depends, therefore, on the condition of the area in which they are implanted. Absence of the anterior chamber and direct contact of the graft with the vitreous are unfavorable factors. 3 references. 7 figures. 2 tables.

The Technique of Corneal Grafting with a Review of Three Cases. *C. A. Pittar, Auckland, New Zealand.* Tr. Ophth. Soc. New Zealand, 1949.

Pittar describes the technic he has adopted for penetrating keratoplasty, referring especially to the gold splint used to fix the graft. This was described in detail in the British Journal of Ophthalmology in September 1949. The splint gives an accurate and even distribution of pressure without touching the central area of the graft. The graft is removed from the donor's cornea by pressing the trephine down on its endothelial surface against a block of paraffin. Three recent cases are described. 20 references. 3 figures.—*Howard Coverdale.*

Crystalline Lens

The Clinical Aspects of Retrolental Fibroplasia with Report on One Case. *I. Irving Vics, Albany, N. Y.* Am. J. Optom. & Arch. Am. Acad. Optom. 27: 251–57, May 1950.

The author summarizes much of the work done on RLF, beginning with the original research of Dr. T. L. Terry of Boston, his reclassification of the disease, the various surgical methods, irradiation with x-ray

and vitamin therapy, etc., that have been attempted to alleviate the condition.

In reporting one case, the author found that the patient, a 17-month-old child, had a refractive error of + 12.00 D. In addition to prescribing for this error, a visual training program was organized in the attempt to give vision to the child, who at the first visit demonstrated no measurable visual acuity. Employing rhythmical stimulative exercises, the peripheral stimulation method and apparatus to create audio-visual conditioning, the author found at the end of three months that the child had a visual acuity of from 2 to 4% of normal. The author offers his clinical procedures to foster an interchange of ideas that might help in aiding those stricken with this disease. 16 references.—*Authors' abstract.*

Vitreous Humor

Treatment of Exogenous Vitreous Infections (*Zur Therapie exogener Glaskörperinfektionen*). *F. Meyer, Vienna, Austria.* Klin. Mbl. Augenh. 115: 384-90, Heft 4, 1949.

Clinical experience has shown that intravitreal injection of penicillin is therapeutically effective even 24 hours after onset of infection. Also, streptomycin is tolerated in small doses of 0.5 mg. in the vitreous. In 2 post-traumatic infections of the vitreous even 5 mg. units produced no toxic changes in the fundus. However, a single injection of antibiotic of relatively low concentration will not suffice and repeated injections are not well tolerated. A fistula permitting escape of vitreous fluid can be used for continuous irrigation of the vitreous with sulfonamide solution for 8 to 10 days or as long as the fistula remains open. Even better results are obtained with penicillin and streptomycin.

In 12 patients with exogenous vitreous infection a fistula was created and penicillin or streptomycin was injected subconjunctivally. If the vitreous is purulent at the time of the operation, penicillin can be injected into the vitreous. A specimen is taken for bacteriologic examination. However, a negative finding is of little significance as frequently the focus of infection will be in the lens or there will be a circumscribed abscess of the vitreous which is not reached by the fistula. The anterior chamber may be punctured and filled with penicillin solution. In the following days 120 to 160,000 units of penicillin are injected subconjunctivally every day, occasionally combined with continuous irrigation of the cornea. In severe cases the anterior chamber is drained daily to stimulate production of aqueous humor, and thus facilitate a more thorough irrigation of the vitreous.

The result of this treatment manifests itself in a striking improvement and the infection subsides shortly thereafter. If the fistula should close prematurely it may be necessary to make another with a larger trephine. A 3 mm. trephine is best. In 5 cases the infection subsided

but in 7 cases it did not respond or the eyeball was destroyed by the disease. In some of these cases the lens was infected. In one instance the infection was controlled but the secondary changes were such as to require evisceration. In 2 cases a post-traumatic Staphylococcus pyogenes aureus infection progressed to panophthalmitis. In only one of the 7 failures was the treatment here described responsible for the result. 29 references. 1 table.

Retina

Retrolental Fibroplasia in Premature Infants. *William Councilman Owens and Ella Uhler Owens, Wilmer Institute, Baltimore, Md.* Read by *Professor F. B. Walsh, United States of America.* Tr. Ophth. Soc. Australia 8: 57, 1948.

The condition of retrolental fibroplasia in premature infants has been intensively investigated by the Wilmer Institute of the Johns Hopkins Hospital during 1945 to 1947 and subsequently. This resulted in considerable increase in our knowledge of the course of the disease. It disproved current theories of the etiology without producing a new one, but indicated further lines of investigation, some of them already being followed at the Wilmer Institute.

The condition was originally described by Terry in 1942. In the fully developed stage of a typical case, an opaque, vascularized membrane lies against the posterior surface of the lens. The globe is often smaller than normal, the anterior chamber is frequently shallow and occasionally posterior synechiae form. Elongated ciliary processes, appearing like coarse teeth of a comb, can be seen behind the iris on the membrane in the extreme periphery of the dilated pupil. In premature infants both eyes are usually involved but not always to the same extent. In some eyes the retrolental membrane might be incomplete and cover only a localized portion of the retrolental space. In others the membrane might be limited to the periphery of the anterior vitreous at the equator of the lens. In these cases a localized detachment of the retina often extends into the membrane. Terry suggested that it was an acquired hyperplasia of embryonic connective tissue in the meshwork of a persistent tunica vasculosa lentis. Reese and Payne suggested it was a hyperplastic remnant of the primary vitreous. Krause considered it to be part of a congenital encephalo-ophthalmic dysplasia—essentially a prenatal abnormality of the cerebral and retinal neuroectoderm.

At the Wilmer Institute the following observations were made: (1) 120 premature children whose birth weight was 4½ pounds or less, born between 1935 and 1944, were examined. No case of retrolental fibroplasia was found; (2) 214 children whose birth weight was 4½ pounds or less, born between 1945 and 1947, were examined. None had retrolental fibroplasia at birth. All were followed for six months. Five cases of retrolental fibroplasia were observed to develop. The inci-

dence was 1.3% in the group of 3 to 4½ pounds and 12% in the group under 3 pounds; (3) subsequent to 1947 further cases were followed, making a total of 9. Retrolental fibroplasia developed in these in between two to five weeks. In these groups of infants the fundi at birth were normal. Before the onset of definite signs of disease the hyaloid system remnants had disappeared. The first sign of disease noted was angiomatous dilatation of the retinal vessels followed by massive retinal exudation and the formation of a retrolental membrane.

Professor Walsh commented on the investigations and pointed out how clearly they disproved the ideas previously advanced to explain the condition. He further pointed out the increased interest in and often extensive treatment given by pediatricians in their attempt to reduce the mortality of premature children, quoting high protein in diets, large doses of vitamins, repeated blood and plasma transfusions, parenteral amino acids, hormone therapy and prophylactic penicillin. He suggested the possible relationship with angiomatous retinae or Coat's disease. He quoted the ocular findings by Reese in twins born three months prematurely. One twin developed retrolental fibroplasia. The other twin, who died at the age of 3 months, had hemangiomatous tissue on the surface of the retina of both eyes at autopsy. In one of the eyes, the hemangiomatous tissue was associated with a detachment of the retina. It is possible that this pathological picture may have represented an early stage of retrolental fibroplasia, although clinically it was not recognized as such. He noted that Hess et al. found hemangiomata of the skin more frequent in premature babies than in fullterm siblings.

The reader will note that in the following descriptions of the progress and characteristics of various retinal conditions, there is often a similarity which might imply a closer relation between these entities than has heretofore been noted. The frequent references to pigmentary changes and the steps in building up the picture are noteworthy. Another point which the reader should keep in mind is the fact that many of the entities appear to have a nutritional background and there is a possibility that some "degenerations" may in reality be deficiencies. This aspect should be considered in relation to retinal detachment and its associated lesions and also to retrolental fibroplasia. To say the least, these papers serve to show that it will soon be necessary to reclassify retinal lesions from an etiological standpoint.—J. N. E.

Bilateral Spontaneous Retinal Detachment in Two Young Patients with Neurodermatitis Disseminata of Several Years' Duration. (*Doppelseitige spontane Netzhautablösung bei 2 jugendlichen seit Jahren an Neurodermatitis disseminata leidenden Patienten*). *Karl Mylius.* Klin. Mbl. Augenh. 115: 247–50, Heft 3, 1949.

Two cases of successive bilateral spontaneous detachment of the ret-

ina associated with neurodermatitis disseminata are reported in detail. In one of these cases particularly, the retinal detachment occurred so immediately after exacerbation of the skin condition that some connection between the two seemed obvious. No other explanation for the retinal detachment could be offered. There was a slight, wholly uncomplicated myopia in both patients, but it appeared most improbable that this could have been the cause of the retinal detachment. Cataract and neurodermatitis are often found in the same patient, especially in the presence of allergic, metabolic or endocrine disease. However, cataract may develop in neurodermatitis without any of these associated conditions. Any direct etiological significance of the diseases mentioned is therefore unlikely. Both of the patients here described had allergic disease and opacities of the lens. The retinal tears were sealed in one eye in each case.

Retinal Dysplasia. *Algernon B. Reese and Frederick C. Blodi, New York, N. Y.* Am. J. Ophth. 33: 23–32, Jan. 1950.

The term "leukokoria" is applied to the group of conditions in infants and young children which produces a white reflex in the pupillary area as a result of opaque tissue behind the clear lens. It is suggested that the congenital forms of leukokoria may be differentiated as follows: (1) retrolental fibroplasia; (2) persistent hyperplastic primary vitreous, and (3) retinal dysplasia. Retinal dysplasia is defined as a bilateral congenital malformation manifesting itself at birth in fullterm infants in association with cerebral agenesis and congenital anomalies elsewhere over the body. Fifteen cases reported in the literature belonging, in our opinion, to the group designated as retinal dysplasia, are described briefly and 8 additional cases studied by the authors are reported in detail. The clinical and pathological characteristics of retinal dysplasia, its differential diagnosis, and its association with congenital anomalies of other parts of the body are discussed. 22 references. 4 figures. 1 table.—*Author's abstract.*

Xanthosis (Vel Discoloratio Flava) Fundi Diabetica and the Appearance of Sharply Outlined Retinal Vessels—Hitherto Unnoticed Characteristics in Diabetic Retinopathy. *Aryeh Feigenbaum, Rothschild Hadassah University Hospital, Jerusalem.* Ophthalmologica 118: 632–36, Oct.–Nov. 1949.

In 68 diabetic patients who were hospitalized, examination of the eyes showed diabetic retinopathy in 48 cases. In examining the eyes with a bright light (a 500-watt bulb) a distinct orange-yellowish discoloration was seen at the posterior pole of the fundus, most marked at the optic disk, in 17 of these 48 patients with diabetic retinopathy. In the cases with this yellowish discoloration, the retinal blood vessels were

sharply outlined to an unusual degree; the veins were dark and the arteries had a "copper wire" appearance. This appearance of the blood vessels was not associated with hypertension, and can probably be explained as due to the contrast produced by the white light between the yellowish discolored area and the red vessels. The average duration of the diabetes in the 17 patients with this yellowish discoloration of the retina was nine years, the shortest duration was two years; the average age of the patients was 52 years. The average cholesterol content of the blood was 255 mg. %, but this was but little higher than the average for the 20 patients who showed no changes in the ocular fundus, and not as high as the average of the other 31 patients with retinopathy. The xanthoses fundi diabetica described are apparently analogous to similar discolorations of the skin and other organs (xanthochromia) not infrequently observed in diabetes and probably resulting from disturbed lipoid metabolism.

Some Considerations on Detachment of the Retina (*Quelques considérations sur la décollement de la rétine*). *G. F. Cosmettatos, University of Athens, Greece.* Ophthalmologica 118: 651–54, Oct.–Nov. 1949.

A report is given of 340 operations for detachment of the retina from 1936 to 1947. For good results it is important to locate the hole in the retina exactly; strong transcleral illumination gives the best results; the central point of the retinal hole and its two ends may be marked with China ink on the sclera. Electrocoagulation is employed in repair under ophthalmoscopic control, nonperforating electrocoagulation around the hole, and finally two or three perforations to evacuate the fluid beneath the retina. The patient is kept at absolute rest for several days after the operation, and the use of Lindner's stenoptic spectacles is also of aid. With the method of treatment employed in these 340 cases, good results were obtained in 70%; in 7 cases with a hole in the macula, results were good. The chief causes of failure were the patient's delay in consulting a physician or in accepting operation, senile degeneration of the retina, and failure of the patient to remain at rest after the operation. 9 references.

The Late Results of Successful Operation for Detached Retina. *C. A. Pittar.* Tr. Ophth. Soc. New Zealand, 1948.

Seven cases, in which operation had been performed 10 or more years previously, are reported. In all, the retina remained in position with a full field. Late improvement in central vision occurred in 4 cases, in some it was two years after operation. One successful reattachment was reported following operation which took place six years after a first unsuccessful operation. There was a dialysis between 7 and 8 o'clock. Central vision improved to 5/60.—*J. Ringland Anderson.*

A Study of the Dominant Inheritance of Retinitis Pigmentosa (*Beitrag zur Kasuistik der dominanten Vererbung der Retinitis pigmentosa*). *Ruth Heuscher Isler, Basel, Walther Gysin, Liestal, and Hansjoerg Hegner, St. Gallen, Switzerland.* Ophthalmologica 118: 858-65, Oct.-Nov. 1949.

A study is reported of three generations of a family in which retinitis pigmentosa appeared in some members of the family in each generation; the ratio of the number of persons showing the lesion to those who did not was 11:10; the lesion was found only in the children of those persons who showed the lesion themselves. All these findings indicate a dominant inheritance of retinitis pigmentosa in this family. The member of the first generation who showed retinitis pigmentosa was observed by the authors at the age of 74 years. At that time the visual fields were greatly restricted and the vision was much reduced. The history showed, however, that this deterioration of vision had been slow in his early life, for at the age of 65 examination had shown but slight restriction of the visual fields, but the disease had advanced more rapidly in the last ten years. While visual function was fairly good in the affected members of the second generation, with some restriction of visual fields in the oldest member of this generation (48 years old), it is possible that these affected members may also show greater loss of vision as they grow older. 12 references. 3 figures.

Ophthalmoplegia and Pigmentary Degeneration of the Retina. *Max Chamlin and Edwin Billet, New York, N. Y.* Arch. Ophth. 43: 217-23, Feb. 1950.

Pigmentary degeneration of the retina is known to be associated with various neurologic disorders. One of the less frequently recognized is that of ophthalmoplegia. Approximately 7 such cases have been reported in the past. This article describes 3 more cases. In all 3 cases, the external ophthalmoplegia started in the early part of the second decade and the ptosis was the most prominent feature. The pigmentary degeneration of the retina was not of the bone corpuscular type, but rather an irregular mottling of yellowish retina and some pigment. In one of these cases there was an additional feature of frank optic neuritis with recovery of vision in a short time.

The authors stress the importance of careful examination of the periphery of the fundi in cases with external ophthalmoplegia not accounted for by myasthenia gravis or other causes. The finding of such pigmentary degeneration helps to place these cases in the category of a degenerative disease rather than some acute condition requiring surgical or medical intervention. 7 references. 6 figures.—*Author's abstract.*

Neuro-Ophthalmology, Optic Nerve, Visual Pathways, Centers and Visual Fields

Meningioma of the Optic Nerve. *W. J. Hope-Robertson, Wellington, New Zealand.* Tr. Ophth. Soc. New Zealand, 1949.

There is reason to suppose that meningiomata of the optic nerve are not as rare as is sometimes supposed. This is a full report of a case in a boy 14 years of age where the eye retained normal vision and field of vision for some years. Until four years after the first examination, the only signs were proptosis and papilledema. Limitation of movement was then apparent and, two years later, radiological evidence of tumor appeared in the sphenoid bone, although the orbital foramen was not enlarged. On removal of the orbital portion of the tumor, the cut end of the optic nerve and sheath showed no sign of involvement. 10 references. 4 figures.—*Howard Coverdale.*

Visual Field Changes and the Value of Quantitative Perimetry in Compression of the Optic Chiasm and the Optic Nerve. *M. A. Falconer, Dunedin, New Zealand.* Tr. Ophth. Soc. New Zealand, 1949.

Falconer adopts Traquair's three-dimensional conception of the field of vision and stresses the importance of campimetry at two meters.

There are at least two distinct patterns of bitemporal hemianopsia, the upper temporal slant type and the hemianopic scotoma type which is less common, less understood and, as the disks do not always show pallor, more easily overlooked. The field changes resulting from different types of compression are described, including those from compression of the nerve at sites other than the chiasm. A detailed description is given of a case of compression by a bony flake projecting into the optic canal. 4 references. 29 figures.—*Howard Coverdale.*

Eyeball, Exophthalmos and Enophthalmos

Metastatic Carcinoma of the Choroid in Cancer of the Male Breast (*Metastatisches Aderhautkarzinom bei Brustdrüsenkrebs eines Mannes*). *Wolfgang Straub, Tübingen, Germany.* Klin. Mbl. Augenh. 116: 61–65, Heft 1, 1950.

In all, 200 cases of metastatic carcinoma of the choroid have been reported in the literature, and in nearly 70% of these, the primary tumor was in the breast, and the metastases developed late in the course of the disease, the patients surviving from 7 to 9 months. In one-third of the cases the choroid metastases were bilateral. When only one eye was involved, it was more frequently the left.

Hitherto only 2 cases of choroid metastases from cancer of the male breast have been reported. The patient here described was 68 years of age and had been subjected to left mamectomy for cancer in March, 1946. In spite of frequent subsequent irradiations, a local recurrence developed and 18 months later vision in the left eye began to diminish. In the left eyeground four yellowish, vaguely defined, slightly prominent, round foci appeared. Vision grew progressively worse due to a flat nodular detachment of the retina especially around the disk. The three smaller peripheral foci were more strongly pigmented but showed no change in size. The enlargement of the suprapapillary metastasis was attributed to the vicinity of the short posterior ciliary arteries. Following an operation for cataract on the right eye, a vesicular retinal detachment also developed in this eye, extending into the macula.

Whereas in the 2 other cases reported, vision was lost within 2 to 3 weeks, in the present case vision was still present, although greatly diminished, after 4 months. 7 references. 3 figures.

Glaucoma and Hypotony

Concurrence of Glaucoma and Ménière's Disease. *E. Godtfredsen.* Acta oto-laryng. 37 : 533–38, Dec. 1949.

After a brief recapitulation of the anatomic and physiopathologic points of resemblance between the eye and the internal ear, as well as of the symptomatology of glaucoma and Ménière's disease, the author reports three of his own observations on concurrent acute inflammatory primary glaucoma and Ménière's disease.

The 3 cases described present different stages and courses, from light to severe, where the eye lesion from an apparently harmless onset nevertheless necessitated Elliot's operation and involved defects of vision. The ear lesion likewise had a tendency to pass from light to severe disabling degrees with impairment of hearing. While there was a pronounced parallelism between the paroxysms in Ménière's disease and the rises in intra-ocular tension, the chronological manifestation of ear and eye lesion respectively was less characteristic. Either disease might come on first. The parallelism between the courses of the eye and the ear lesion suggests the presence of a common pathogenic factor, probably a common vasomotor (psychosomatically released?) instability. This theory is supported by the hereditary as well as the manifest signs demonstrated of neurovegetative lesions, fitting naturally into our present view of the angioneurotic character of both Ménière's disease and acute glaucoma. 16 references.—*Author's abstract.*

A Contribution to the Neurological Relations of Glaucoma (*Contribution à la neuroclinique du glaucome*). *Jean Sedan and Simon Sedan-Bauby, Marseilles, France.* Ophthalmologica 118: 534–47, Oct.–Nov. 1949.

For twenty-four years, the authors have been interested in the neurological symptoms associated with glaucoma. They have observed a case of temporary paresis of the external rectus in association with each recurrent attack of acute glaucoma, and temporary disturbances of convergence occurring at the time of or just before the rise in intraocular pressure. They have also seen cases of corneoconjunctival anesthesia following glaucoma and several cases of glaucomatous vertigo that were relieved by enucleation of the glaucomatous eye or Elliot's operation. Certain neurological conditions may be the cause of glaucoma. In one case of aerophagia and eructation, glaucoma developed whenever symptoms were severe; treatment for these symptoms also relieved the glaucoma. Several cases are cited in which glaucoma followed emotional disturbances—either fear or joy. In one case, attacks of glaucoma could be overcome by inducing severe muscular fatigue. This corresponds with findings of Filatov and his associates who reported a lowering of intraocular pressure in glaucomatous patients by walking or other exercise to the point of fatigue. 21 references.

Hormone Excretion of Glaucomatous Patients. *M. Radnot and M. Csillag, University of Budapest, Budapest, Hungary.* Ophthalmologica 118: 998–1002, Dec. 1949.

Determinations of the urinary excretion of estrogen and gonadotropic hormone were made in 48 patients with glaucoma, including 31 women in the climacteric, 11 sexually mature women and 6 sexually mature men. The excretion of both hormones was within normal limits except in 2 cases. One of the sexually mature women, with acute glaucoma, showed an abnormally high excretion of gonadotropic hormone at the first examination but subsequently, a normal excretion of this hormone. One of the men with glaucoma simplex showed an abnormally high excretion of estrogen. These observations indicate that the sex hormones do not play an important role in the increase of intraocular pressure; if they have any effect at all, it is probably through the nervous system. 5 references.

Glaucomatous Uveitis. *N. M. Macindoe, Sydney, Australia.* Tr. Ophth. Soc. Australia 8: 138, 1948.

Four cases of glaucomatous uveitis in young people are described. In each case acute glaucoma, which had been the presenting symptom, was secondary to iritis, hidden cyclitis, early peripheral choroiditis and

circum papillary choroiditis. Paracentesis of the anterior chamber, atropine drops and sulfadiazine by mouth were used and treatment was successful. A warning is given that acute glaucoma in young persons may mask uveitis.

The Dependence of Surgery on Physiology. With Special Reference to the Treatment of Glaucoma. *Stewart Duke-Elder, London, England.* Am. J. Ophth. 33: 11–18, Jan. 1950.

The author appeals for a more physiological approach to eye surgery, and cites glaucoma as an example of an ocular condition in which operative treatment relieves the outstanding symptoms while leaving unaffected the underlying disease process. Following a short survey of the history of glaucoma, in which prominence is given to the full description of the disease in 1830 by Sir William Mackenzie, the physiologic and pathologic aspects of the problem are considered in some detail.

Glaucoma can be divided into two categories, congestive and noncongestive. In the congestive type, whether of primary or secondary origin, the cardinal feature is vascular congestion, and treatment should be directed to its control. The state of the drainage channels and the condition of the angle of the anterior chamber are of but secondary significance. In noncongestive or simple glaucoma, however, there is no evidence of vascular congestion. The author considers that the essential feature may be an inadequacy of the ocular circulation characterized by a lack of adaptive accommodation in the small vessels and a nutritional sclerosis of important tissues in the eye. In the early stages, the diseased eye exhibits an exaggeration of the normal diurnal variation of tension, while the base pressure remains unaltered. Variations occur in the fluorescein permeability curve, and there is a change in response to the lability and venous pressure tests.

The glass rod test is critically discussed, and the suggestion is made that in the normal eye, it is the locus of the first venous branching in the venous pressure gradient which determines whether the result of the test for any particular vein is positive (aqueous influx) or negative (blood influx). The clinical picture depends upon the sclerotic effects of the vascular instability which is cited as the essential feature in primary simple glaucoma. If the tissues of the whole eye are affected, the classical findings of the condition are present. If the posterior segment is affected preferentially, visual symptoms and cupping of the disk occur without tension, and if the anterior segment is chiefly involved, the tension becomes raised early in the disease.

The present surgical approach to the problem is confined to a search for new and artificial drainage channels for the aqueous. The tendency is to forget that disease is rarely local and it is only when the physiological principles of the disease are fully understood that we shall be

able to offer relief which is complete, universal and permanent.—*Author's abstract.*

The Early Diagnosis of Chronic Primary Glaucoma with Remarks on the Value of Perimetry in Relation to Prognosis and Treatment. *R. P. Wilson, Dunedin, New Zealand.* Tr. Ophth. Soc. New Zealand 39–52, 1949.

In the diagnosis of chronic primary glaucoma the following are recommended: (1) digital palpation of the eyes of all patients; (2) repeated investigation and tonometry in all suspicious cases; (3) careful scrutiny of the disks; (4) quantitative perimetry on the 2 meter screen with special reference to depression of the central isopters, baring of the blind spot, Roenne's step and the characteristics of the arcuate scotoma.

Wilson advises early operation and regards the ultimate prognosis as being generally poor if the field is much affected before operation. 10 figures.—*Howard Coverdale.*

Hypopituitarism in Five Cases of Primary Juvenile Glaucoma (*L'hypopituitarisme dans sing cas de glaucome juvénile primitif*). *P. Jeandelize, Nancy, France.* Ophthalmologica 118: 548–54, Oct.–Nov. 1949.

In 5 cases of primary glaucoma in children, the blood sugar was definitely below normal and the chlorides of the blood somewhat below normal; the blood cholesterin was high; the basal metabolic rate varied from −7% to −18%. The injection of posterior pituitary extract and the administration of glucose did not result in the appearance of sugar in the urine in any of these patients. These findings were considered evidence of hypopituitarism. Treatment by diet containing a large amount of sugar and subcutaneous injections of pituitary extract resulted in a progressive decrease in intraocular pressure. In one case in an adult with chronic glaucoma, in which continued use of pilocarpine and eserine was necessary, it was found that treatment with glucose solution also lowered the intraocular pressure, although the patient's blood sugar was normal. This suggests that the pituitary extract employed in juvenile glaucoma acts on the intraocular pressure by raising the blood sugar. 6 references.

Anesthesia

Research in the Use of Curare for Ocular Surgery. *John R. Roche, Brooklyn, N. Y.* Am. J. Ophth. 33: 91–97, Jan. 1950.

Curare was investigated as to its practicability for producing akinesia of the globe. The occasional failure of retrobulbar novocaine to produce satisfactory quietude of the globe and the potential hazard of

producing an intraorbital hemorrhage, plus the increased tonus sometimes encountered in cataract patients under local anesthesia, are reasons for considering a more certain means of obtaining the desired results. Curare, a paralysant having its effect at the myoneural junction, was employed intravenously in the form of d'tubocurarine, 20 units per cc.

Eighty subjects were examined to observe the effects of curare on ocular motility. Thirty tests were conducted administering curare to the subject to the stage of inability to move the globes on command. Fifteen of these received 0.2 Gm. of sodium amytal one and one-half hours prior to the test. The average amount required to reach the end point in the first group was 76 units. Cessation of ocular movements averaged 9 minutes' duration. The second group having received 0.2 Gm. of sodium amytal one and one-half hours prior to the test required an average of 90 units to paralyze command movements of the globes. Follow movements were retained in all cases.

Succeeding groups of patients were observed to determine the amount of curare required to obtain "quiet eyes." Twenty-five who received 0.2 Gm. of nembutal one to two hours before the curare required an average of 45 units to reach the end point. Twenty-five who received 0.2 Gm. of phenobarbital two hours prior to the curare required an average of 42 units to elicit the desired result. Observations made during the tests indicate that there is a fair constancy to the progression of muscle groups affected by the curare. A quieting or relaxation of muscle tone throughout the entire body appeared first, followed by a flaccidity of the facial muscles, then by ptosis of the lids and paralysis of the levator palpebrae, and next the elevators and the depression of the globe followed by the horizontal rotators. The last groups to be affected in sequence were those of the extremities, the accessory muscles of respiration, the intercostals and the diaphragm. No single stage was sharply demarcated. There was overlapping of the groups or zones involved. Muscles of deglutition and the cough reflex appeared to be paralyzed about the same time that the ocular muscles were affected. An apprehensive patient may become more so, if not sedated. Reduction in tidal volume of pulmonary exchange may add to apprehension. Curare is not indicated in the presence of pharyngeal or bronchial secretions. Emphysema, asthma or a history of the latter are contraindications to curare. Myasthenia gravis multiplies the effect of curare twentyfold and is therefore a contraindication.

The paralysant acts immediately, the maximum effect being observed in two minutes. Extensive and complete paralysis may be recovered from in five minutes, and the entire effect of the agent will be gone via renal excretion and hepatic detoxification in twenty minutes. After injection at the rate of 20 units of curare intravenously per minute the patient may be observed carefully for the drug's effects. The beginning of ptosis may be taken as an indication that global akinesia

is being attained. Ten to twenty units administered beyond the point of ptosis will produce satisfactory akinesia. No dosage of curare can be calculated. Individuals require varying dosage to obtain the same effects. The average dose required to produce akinesia of the globe lies between 40 and 60 units.

The danger of curare lies in its paralyzing effect on the respiratory muscles but care in its administration will prevent this dosage. Prostigmine intravenously up to 2 mg. may be given as an antidote, failing which endotracheal intubation and O_2 must be used to tide the patient over the period of apnea. The safety factor in the use of curare lies in close observation of the drug's progressive effect. A "quiet eye" may safely be obtained for intraocular surgery by the judicious use of curare. 4 references.—*Authors' abstract.*

The preliminary study is presented for the purpose of calling the attention of surgeons and anesthetists to what may not be a rare occurrence, namely, closure of the central retinal artery after general anesthesia. It seems that a combination of loss of blood, shock, pressure on the eye in a patient with a low nasal bridge, and prolonged anesthesia are necessary for its production.—Editor.

Pharmacology, Toxicology and Therapeutics

Experiences with Mintacol (*Erfahrungen mit Mintacol*). *Karl Büning, München, Germany.* Klin. Mbl. Augenh. 115: 534–38, Heft 5, 1949.

Bayer's mintacol, the di-ethoxy-phosphoric acid p-nitrophenolester) was tested in normal and glaucomatous eyes in various dilutions, both aqueous and oily. The series included 6 normal eyes, 6 cases of simple glaucoma, 35 of chronic inflammatory glaucoma, 14 of acute glaucoma, 4 of hemorrhagic glaucoma, 5 secondary glaucomas, and 9 total glaucomas. These tests indicate that mintacol is equal in efficacy to the usual miotics and can be used to replace or supplement them. A weak solution is equal to a 2% pilocarpine solution. The pressure-reducing potency is not quite as marked as ¼% eserine ointment, but the oil is at least as good. A comparison of dilutions shows that the pharmacologic potency of mintacol is superior to that of all other miotics.

Mintacol is well tolerated and causes only a slight burning sensation. Following the oily solution, 4 patients complained of pain developing 15 minutes after the instillation and persisting for 2 to 3 hours, radiating to the first, second and occasionally even to the third branch of the trigeminus. A strong solution will sometimes cause a sensation of intraocular tension, and slight frontal headache. These symptoms do not occur with the use of medium solutions. Mintacol produces a reduction in intraocular pressure by the same mechanism as other miotics. It will not cure glaucoma. Even when pressure is controlled, operation may be necessary. 1 table. 3 charts.

Local and General Sulfonamide Therapy in Diseases of the Eye (Badional, Eleudron, Supronalum and Marbadal) (*Oertliche und allgemeine Anwendung von Sulfonamiden bei Augenkrankungen [Badional, Eleudron, Supronalum u. Marbadal]*). *F. Dahmann, Coburg.* Klin. Mbl. Augenh. 115: 260-67, Heft 3, 1949.

The sulfonamides mentioned were applied locally in the treatment of 700 patients with various diseases of the eyes. In cases of acute inflammation of the conjunctiva, rapid improvement followed such treatment. In stubborn cases a combination of intraocular and internal administration of sulfonamides frequently yielded good results.

Failures due to the presence of sulfonamide-resistant organisms were very rare. In such cases, good results were often obtained by a combination of penicillin and sulfonamides.

Sulfonamide therapy yielded less favorable results in affections of the posterior segment of the eye, and the vitreous did not respond to such treatment. A 5% eleudron solution, or a 7.5% badional solution may be used, with preference for the latter which is better tolerated. Supronalum powder was used for ulcus serpens. Also in endogenous ocular inflammations sulfonamide powder can be recommended, especially for perforation injuries and herpetiform diseases. As a preliminary preparation for operations on the eyeball an eyebath may be given. In all conditions treatment must be long and thorough to insure results. In office practice, best results were obtained by instillation of 7.5% badional solution every 3 hours (5 times a day, or more) for the first 2 to 3 days. Once the acute inflammation has subsided, 3 times daily will suffice.

In stubborn cases, this treatment may be combined with detoxin, parenteral protein, pyrifer, atophanyl or penicillin. In some cases of eczema of the eyelids, a combination with zinc ichthyol ointment may prove beneficial. In experiments in which badional ointment (10%) was used on one side, and white precipitate on the other, the sulfonamide yielded as good results as the mercury. In ulcus serpens, oral administration of supronalum combined with the usual local treatment gave satisfactory results. Corneal scars are much less marked following sulfonamide therapy than following application of some of the earlier drugs employed. Another advantage is that argyrosis need not be feared. The badional concentration mentioned produces only a slight stinging sensation. Subconjunctival injection of the solution is painful and has therefore been abandoned. Supronalum powder is more effective locally. It causes some lacrimation, but no anesthetic is needed and upon repeated instillation the symptoms become less severe. In some cases a slight chemosis developed, but none of the serious complications mentioned by other writers was observed, e.g., optic neuritis or transitory myopia. Occasional itching of the skin can be relieved by intravenous injections of calcium. With internal administration of

sulfonamides it is best to give soda bicarbonate and ¼ liter of fluid. 16 references.

The Use of Pantothenic Acid in Ophthalmology (*De l'emploi de l'acide pantothénique en ophtalmologie*). *L. Rosen, La Chaux de Fonds.* Ophthalmologica 118: 940–44, Oct.–Nov. 1949.

The author reports the use of a preparation of pantothenic acid (bepanthène) in 44 cases of ocular disease. Most of these cases (35) were corneal ulcerations of various types. In these cases an ointment of the pantothenic acid preparation was usually employed, applied four times daily. In 2 cases the preparation was instilled as eye-drops three times daily. Good results were obtained with the pantothenic acid preparation in 4 cases of lesions of the eyelids, but the best results were obtained in the cases of corneal ulceration, which healed rapidly under treatment. These included 26 cases of marginal ulcer of the cornea; in the 9 male patients in this group, the ulcer healed in five to seven days, and in the 17 female patients in four to ten days, an average of seven days. In some of these cases, treatment with sulfonamides had failed to effect a cure.

Lacrimal Apparatus

Lacrimal Gland Tumours. *A. E. MacDonald.* Tr. Canadian Ophth. Soc. 45–62, 1949.

Seven cases of lacrimal gland tumor are reported, 4 of mixed tumor, and one each of adenocarcinoma, lymphoblastoma and tubercle. The patients complained of excess or deficiency of tears, diplopia and appearance of proptosis. For removal of the tumor two exposures can be used. When there is bony involvement of the roof of the orbit the transfrontal approach is best. When the tumor is of small size it may be exposed by cutting down on the periosteum at the lateral orbital margin, stripping this tissue from the lateral bony wall of the orbit, and then splitting the periosteum over the tumor. If this exposure is not adequate, part of the lateral orbital wall may be removed. If the tumor is large, but bone is not involved, exenteration is the best procedure. If the tumor is radiosensitive, radiation therapy is indicated.

Mixed tumors of the lacrimal gland are rare. Pleomorphism is characteristically found on section. Récurrences are common; a five-year cure is worthy of reporting. 13 references. 11 figures.

Eyelids

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Industrial Ophthalmology

History of the Safety Movement. *Daniel L. McKeen, Safety Engineer, Thermoid Co., Trenton, N. J.* Am. J. Optom. & Arch. Am. Acad. Optom. 27 : 117–25, March 1950.

Earliest man was more vitally concerned with safety than we are today. Safety, to him, was an unceasing vigilance against danger of the elements and daily hazards of living that we need not fear. As man progressed through the centuries to the machine age his chances of survival for his allotted span of life has increased. Then the introduction of machinery and the development of factories created another real menace to the life and health of factory workers. The bloody toll of factory accidents caused an economic and moral problem that deeply affected society. Early efforts of religious and governing authorities to correct the conditions causing these factory accidents were brought to fruition by the passage of laws that compelled mill owners to pay the costs of accidents. This was true first in Europe and then in the United States. Subsequent developments in the Safety Movement were dependent upon improvements in the laws and the agencies enforcing them. Of corresponding importance was the early and continuing work of insurance companies and other organizations devoted to the improvement of health and safety in all phases of our present daily life. 2 references.—*Author's abstract.*

Miscellaneous

Ophthalmology in the Second New Zealand Expeditionary Forces. *Howard Coverdale, Auckland, New Zealand.* Tr. Ophth. Soc. New Zealand 76–84, 1949.

Lt. Colonel H. Coverdale was with the New Zealand forces from the first battle in Greece in 1941 until just before the last in Northern Italy in 1945, and any interest this contribution to the history of medical services may have outside New Zealand results from this continuity of experience. The paper deals in the main with equipment, administration, medical grading and the general character of the work from a statistical point of view. 23 references.—*Author's abstract.*

Clinical and Histopathological Considerations on a Case of Blastomycosis of the Eye and Face. *H. Pichette.* Tr. Canadian Ophth. Soc. 111–23, 1949.

A 35-year-old farmer was seen with a small tumor, resembling a chalazion, on the right upper lid. During the following six months this

swelling spread to produce a cauliflower-like mass involving nearly the whole right half of the face and the dorsum of the right hand. Cultures of the material taken from the lesions grew only unimportant organisms. Sections showed a fungus which appeared as clear round cells with a fine limiting membrane. The patient was losing weight, his appetite was poor, his temperature was 100 to 101° F.; orchitis and epididymitis developed. This situation continued for five months. When he received roentgen treatments to the lesions there was a pronounced improvement; after two months the lesions had almost resolved, leaving scar tissue. Both lids were almost completely destroyed. The eyeball was atrophic and the cornea was opaque and vascularized. However, the general condition improved, he gained weight and felt well. Reconstruction of the eyelids with an ocular prosthesis is planned for the future.

Blastomycosis is a wide-spread but rare disease. It is a chronic infection characterized by nodules and granulomas in the lymphatic system, epidermis and subcutaneous tissue. It begins as a papule and grows rapidly, forming a papillomatous growth with deep irregular clefts filled with pus. The disease may involve the lid, conjunctiva, or cornea. In the majority of cases the pathogenic organism can be demonstrated. Sections show hyperkeratosis, exorbitant inflammatory reaction, and the presence of yeast bodies. Several forms of treatment have been recommended, including excision, cauterization, radiation and large doses of potassium iodide. This infection seems to offer a good field for the trial of steroid substances, particularly vitamin D_2. 11 references. 5 figures. 1 table.

ANNOUNCEMENTS

New York University.—The appointment of Dr. Arthur Gerard DeVoe as Professor and Chairman of the Department of Ophthalmology, New York University Post-Graduate Medical School, a unit of the New York University-Bellevue Medical Center, was recently announced by Dr. Robert Boggs, Dean of the Medical School.

In the post, Dr. DeVoe will be in charge of all ophthalmological teaching, research and patient care at the Medical Center, Dr. Boggs said. Among Dr. DeVoe's responsibilities will be the direction of Bellevue Hospital's Eye Service, including the care of patients with eye diseases, teaching of ophthalmology at the undergraduate, graduate and postgraduate level and the carrying out of various research projects.

Dr. DeVoe for the past ten years has been a member of the staff of the Institute of Ophthalmology, Presbyterian Hospital. In World War II, he served in the Medical Corps of the U. S. Army from 1942 to 1946, being discharged with the rank of major. Since 1946 he has been Senior Consultant at the U. S. Veterans Administration Hospital, the Bronx.

Dr. DeVoe is a Fellow in the American College of Surgeons and a member of the following medical societies: The American Medical Association, American Academy of Ophthalmology and Otolaryngology, American Ophthalmological Society and the Association for Research in Ophthalmology. He was graduated from Columbia University with the degree of Doctor of Medical Science in 1940, from Cornell University Medical School as an M.D. in 1935 and from Yale University with the degree of A.B. in 1931.

Safety Eyewear Frame Selection Made Easy

Rochester, N. Y.—To aid industrial safety directors in choosing the proper safety glasses for 69 specific jobs, Bausch & Lomb has produced a compact, easy-to-use Safety Eyewear Selector.

"The problem of determining which type safety frame provides the best on-the-job protection is solved by using the selector," according to Frederick J. Koeth, head of Bausch & Lomb's Protective Eyewear Department.

Job classification numbers refer users to a sliding selection table that lists such occupations as acetylene welders, drillers, platers, riveters, and the like. The various safety frames applicable for each task are numbered and illustrated for identification. Koeth further stated that, "Anything which simplifies administration of safety programs bolsters the extent of the programs' coverage."

The selectors may be obtained from Bausch & Lomb area representatives in the United States and Canada.

BOOK REVIEWS

The Practice of Refraction. *Sir Stewart Duke-Elder.* St. Louis, C. V. Mosby Co., 1949. 309 pp. 216 illus. $6.25.

The first edition was published in 1928; there have been five editions, with the fourth edition being reprinted twice. All editions of Sir Duke-Elder's book on refraction have been by far the most popular books on this subject in recent years.

The fifth edition contains several alterations, since the fourth edition was little altered due to the exigencies of the war. The plan of the book has remained unchanged but new material has been added on several phases of refraction. The etiology and significance of myopia are regarded from a different point of view. Transient changes in refraction are added in reference to more recent drug therapy. The subject of aniseikonia is objectively evaluated and the newer instruments for its testing are illustrated. The description of the mechanism of accommodation has been revised according to the more recent concepts. The chapter on convergence has been amplified by classifying and describing the types of anomalies of convergence and introducing the concept of

fatigue of convergence. Orthoptic treatment is tersely evaluated as to indications, methods, and results to be expected in the light of more recent experience. Descriptions of streak retinoscopy and velonoskiascopy have been added and the section on refractometry has been enlarged.

The chapter on spectacles has been improved by presenting the theory of best-formed lenses and effectivity of lenses; the section has been made more complete by the addition of several recent developments.

Those men familiar with the previous edition will recognize the figures of former editions and will find several clearly presented new instruments. New readers will benefit by the author's unusually excellent arrangement of the material and clear but concise presentation of the fundamentally important work in ophthalmology. In this edition, the subject is brought up to date by addition of the most recent advances in the field of refraction and allied subjects.

For the student who requires a clear and concise work for studying refraction and for the practitioner who wishes to become authoritatively informed on recent developments in this field, this book assumes first place.—*Conrad Berens, M.D.*

Physiology of the Eye. *Arthur Linksz, M.D., F.A.C.S.* New York, Grune & Stratton, 1950. 334 pp.

A volume on Optics by Arthur Linksz is the first of three volumes on physiology of the eye and is a valuable addition to this important fundamental part of ophthalmology. The book is divided into three parts, The Physics of Light, Geometric Optics and The Eye as an Image-Forming Mechanism. The material in this volume has been used in lecturing to the graduate students in ophthalmology at New York University with outstanding success. The writing is unusually clear and interesting and the selection and printing of the illustrations have been done with care. A few general references are given and although the inclusion of specific references might aid the research worker, it would not add greatly to the value of the book for the student of the basic sciences.

The inclusion of an adequate index adds to the value of the work for ready reference. One must agree with Lancaster, by whom the foreword was written, who said, "ophthalmologists are to be congratulated that now such a satisfactory book is available and will look eagerly forward to the publication of the second and third volumes."—*Conrad Berens, M.D.*

Clinical Orthoptic Procedure. *William Smith, O.D., Massachusetts College of Optometry, Boston, Mass.* St. Louis, C. V. Mosby Co., 1950. 372 pp. 70 illus. $8.00.

There has been a need for a compilation of material on orthoptic procedures based primarily on clinical experience and this book is de-

voted to fulfilling this need. The procedures described are simple and sound and easily applied in the average office. Of considerable practical value is the inclusion of a great variety of illustrative clinical case reports.

The usual chapters on ocular anatomy, physiology, optics, visual psychology, and ocular mechanics are omitted intentionally as it is assumed that one interested in the practice of orthoptics will be familiar with these fundamentals. However, frequent brief references are made to these factors in order to refresh one's memory or for further study.

Chapter I presents an interesting historical review of the field of orthoptics with due homage to the work of such great masters as Aegineta, Ali Ibn Isa, Paré, Bartisch, Buffon, Darwin, Javal, Pavlov, Wheatstone, Mackenzie, von Graefe, Donders, Worth, Remy, Cantonnet, Filliozat, Maddox, Bielschowsky, Lancaster, etc. Chapters II, III, and IV discuss Preliminary Considerations: classifications and definitions of orthoptics, tests for heterophorias and strabismus, retinal correspondence, fixation and projection, types of amblyopia, and value of orthoptics in amblyopia. Chapters V to XVII, inclusive, are devoted to the clinical procedures employed for various anomalies. Emphasis is placed upon the "teaching" process of developing monocular and binocular primary visual functions; specific attention is given to the clinical procedure in esophoria, exophoria, hyperphoria, concomitant esotropia and exotropia, alternating strabismus, compound muscle anomalies, reading difficulty cases, the very young squinter, and in cases of anomalies of accommodation, including pseudomyopia, myopia control, and incipient myopia. Chapters XVIII, XIX, and XX are concerned with miscellaneous visual and neuromuscular anomalies such as amblyopia due to anisometropia, constant diplopia, post-operative diplopia, hysteria, and paralytic squint. The types of anomalies discussed are profusely illustrated by typical case reports which add greatly to the understanding of the subject matter. Chapter XXI reviews the usefulness of the available orthoptic instruments: the stereoscope, phorometer, stereo-orthopter, rotoscope, telebinocular, stereodisparator, ortho-fusor, etc.

The Appendix contains additional case reports with treatment procedures in many different type cases. The Glossary of Terms used in orthoptics, the Bibliography, and Index sections are particularly helpful to the interested reader and add materially to the value of the book as a reference work. The publishers have done an excellent job of printing the text and of enhancing the illustrations. This book is unusual in its attempt to present clinical orthoptic procedures without the usual academic considerations but bolstered primarily with the weight of extensive clinical experience. Anyone interested in the practice of orthoptics will most certainly benefit by reading this book.—*Robert E. Bannon.*

OTORHINOLARYNGOLOGY AND BRONCHOESOPHAGOLOGY

Otology

Audiology

See Contents for Related Articles

External Ear

Fistula Auris Congenita. *Jack B. Miller, Portland, Ore. and Paul M. Moore, Cleveland, Ohio.* Arch. Otolaryng. 51: 245–57, Feb. 1950.

Fistula auris congenita is a condition which is frequently overlooked, and it is often the subject of mistaken diagnosis. It consists of a fistulous opening in the skin, a tract leading down into the tissues, and a blind pouch or cystic dilatation in close proximity with the cartilage of the auricle. If infected, it may be quite annoying and painful to the patient.

The three most common sites are: pre-auricular, marginal, helicine and crural. The frequency of occurrence has been variously stated from 0.19 to 5.2%. A definite familial tendency exists, and the condition is transmitted as an irregular dominant. The embryologic origin of the defect is not entirely clear. However, there is evidence that they are due to inclusions of skin of specific intertuberculous grooves or of a part of the angle between the base of the tubercle and the surrounding skin.

The only successful treatment is complete removal of the tract and the sac. This is best accomplished by sharp dissection after having stained the tract and sac with gentian violet. Complete healing may then be expected to take place within five to seven days. 26 references. 4 figures.—*Author's abstract.*

Pseudomonas Aeruginosa Dermatitis Successfully Treated with Streptomycin. *Maurice Saint-Martin and Gerard Lasalle, Montreal, Quebec, Canada.* Canad. M. A. J. 62: 498–99, May 1950.

Previous successful treatments of Pseudomonas aeruginosa infections of ear by streptomycin are reported by Callaway and Sulzberger. A case of acute bilateral eczematous dermatitis of the ear canal was rapidly cured by this same treatment. A girl, 21 years of age, seen July 30, 1948, had been suffering from these lesions for the last three months. Despite numerous treatments, antiseptics, penicillin locally and parenterally, tyrothricin, etc. no improvement was noted. Pus from both ears gave a pure culture growth of Ps. aeruginosa. To ascertain the value of streptomycin treatment, the left ear was treated with an aqueous solution of streptomycin containing 2,500 units per cc. After

96 hours of treatment, the right ear was cleared from purulent material and the cultures were consistently negative for Ps. aeruginosa. The right ear, treated with B.Q.X. (sodium benzenoxydioxypyrolidiethanoate) did not show any improvement after 96 hours. Subsequent streptomycin treatment resulted in a definite cure after 72 hours.

The infecting strain was very sensitive to streptomycin, being inhibited by 1 unit per cc. As a result of therapy, a variant of Ps. aeruginosa was observed. This variant was a filamentous form and had lost the powers of liquefying gelatin and producing pyocyanine. These characters were not changed after 3 subcultures and 1 guinea pig passage. The passage showed that this variant had lost none of its pathogenicity. 5 references.—*Author's abstract.*

Internal Ear

The Adaptation of the Ear to Sound Stimuli as a Measurement for Loudness Perception and the Distribution of Stimulation in the Organ of Corti (*Adaptation des Ohres an Schallreize als Mass für die Lautstarkeempfindung und die Erregungsverteilung im Cortischen Organ*). *E. Luscher and J. Zwislocki, Basel, Switzerland.* Acta oto-laryng. 37: 498–508, Dec. 1949.

Loudness is perceived as a purely subjective sensation and for this reason considerable difficulty is encountered in its direct determination. Therefore, indirect methods which permit the determination of loudness on the basis of the measurement of the auditory threshold acquire greater importance. The already known masking method of Fletcher has the disadvantage that at least two tones must be conducted to the ear simultaneously and this leads to interference which can influence the measurements. In the new method these disturbing effects are eliminated.

The new method is based on the measurement of the residual adaptation of the ear which is observed in an elevation of the auditory threshold by a previous sound stimulus. In people with normal hearing this elevation of the auditory threshold is in an approximately constant proportion to the intensity of the stimulating tone. It is principally concerned with the frequency of the stimulating tone but, like masking, it also spreads to the neighboring frequencies. Since each frequency is coordinated with a definite place in the basilar membrane, a corresponding distribution of the adaptation along the organ of Corti, which probably reproduces the distribution of stimulation, may be determined. The total stimulation, i.e., the sum of the stimulations of all the sensory cells stimulated, and in this way the total adaptation or the total residual adaptation, may be obtained by the integration of the curves of the distribution of the residual adaptation along the basilar membrane. For this it is necessary, first of all, to transfer these curves

from the db scale to a linear scale. With a suitable selection of units, a simple relationship between the adaptation areas and the loudness, expressed in sones, is obtained. For the conditions of our research, i.e., the determination of the elevation of the auditory threshold by means of a tone impulse of 0.03 sec. duration, 0.12 sec. after the cessation of the stimulating impulse, the formula

$$\text{Sone} = (\text{Ad})^{1.3}$$

in which "Ad" is the linear unit of adaptation area, was obtained. By reducing the interval to approximately 0.06 sec. a direct proportion between sone and units could be obtained.

The relationships mentioned above are valid for all frequencies above 500 cycles. The adaptation method for the determination of loudness may also be used with persons who are hard of hearing. In one case of monaural acoustic trauma the indirect determination of loudness by means of residual adaptation could be directly controlled by a comparison of loudness with the healthy ear. A satisfactory agreement between the direct and the indirect method was obtained. 12 references. 9 figures.—*Author's abstract.*

Further Experimental Studies of the Toxic Effects of Streptomycin on the Central Vestibular Apparatus of the Cat. *Julius Winston, F. H. Lewey, André Parenteau, Philip A. Marden and Faith B. Cramer, Philadelphia, Pa.* Ann. Otol., Rhin. & Laryng. 58: 988-96, Dec. 1949.

In a previous report evidence was presented of damage to the central portion of the vestibular mechanism of cats by streptomycin. Further evidence of such pathology based on a larger series of animals is here presented.

Three totally different methods of investigation were employed:

1. Vital staining with 20 cc. of a sterile, isotonic saturated solution of trypan blue injected into the right carotid artery toward the heart.

2. Routine histopathologic study of sections of the cat's brains stained with cresyl violet and phosphotungstic acid and in a few brains with the Bodian silver impregnation stain.

3. By the surgical destruction of the vestibular nuclei on one side in the brain stem. This method of investigation is based upon the experimental work of Spiegel and Demetriades on the vestibular compensatory mechanism. In normal animals the surgical destruction of the vestibular nuclei on the right side of the brain stem produces a nystagmus to the left; however, in an animal in which the central vestibular mechanism in the brain stem has already been destroyed by streptomycin, the surgical destruction of the vestibular nuclei on one side of the brain stem should not evoke a nystagmus. This method of investigation does not exclude the possibility of concomitant damage to the

peripheral vestibular end organ. 3 references. 4 figures.—*Author's abstract.*

Inner Ear Deafness of Sudden Onset. *John R. Lindsay and Jacob J. Zuidema, Chicago, Ill.* Laryngoscope 60: 238-63, March 1950.

Sixteen cases have been presented of unilateral inner ear deafness of sudden onset with or without vestibular symptoms. The first 4 cases represent types in which the ear complication was associated with a systemic disease and could best be interpreted as a toxic neuritis or neurolabyrinthitis. These patients were profoundly deaf but manifested wide variation in the extent to which the vestibular apparatus was involved.

The next 12 cases of unilateral inner ear deafness of sudden onset showed a wide variation in the degree of impairment. High tones were primarily affected, the low tones being unimpaired in mild cases, while all tones were involved or lost in severe cases. Partial recovery occurred in some during a period of about three months after onset, but there were no fluctuations in the thresholds. Tinnitus was a prominent symptom at the onset in all cases. Vertigo was absent in those with a mild hearing loss but present in those with moderate or severe impairment. In some the vertigo persisted for as long as three years whenever certain positions were assumed. A permanent depression of the caloric responses usually occurred. The vestibular involvement varied in severity but in most seemed about proportionate to the auditory disturbance. Attacks did not recur. The time of onset varied from the third to eighth decade, 3 cases occurring before the age of 30. The similarity of all cases in this group suggests a common etiology. The characteristics are so widely different from those of Ménière's disease (hydrops of the labyrinth) as to indicate no relationship. Vascular disease such as hemorrhage, thrombosis, or spasm appears unlikely in view of the age distribution. A vasomotor disturbance, an allergic reaction and a toxic neuritis or neurolabyrinthitis must be considered. In view of the similarity of this disturbance to that seen in association with some diseases of an infectious nature, a toxic disturbance appears likely. The onset in relation to an upper respiratory infection in a few cases may be significant.

Four cases of the specific syndrome consisting of bilateral inner ear deafness and vertigo associated with nonsyphilitic interstitial keratitis are also reported. The etiology of this uncommon syndrome is unknown but clinical characteristics suggest a toxic neurolabyrinthitis due possibly to some type of virus. 6 references. 19 figures.—*Author's abstract.*

Observations Through Cochlear Fenestra. *H. B. Perlman, Chicago, Ill.* Laryngoscope 60: 77–96, Jan. 1950.

Through small fenestra direct observations were made of the physical nature of the structures within the cochlea and their response to acoustic stimulation. Fresh human and animal temporal bones were used with an intact conducting mechanism. Reissner's membrane offers very little but uniform resistance to point pressure with a hair probe. The bony spiral lamina is considerably stiffer. After tearing through a segment of Reissner's membrane, the tectorial membrane can be identified as a narrow gelatinous ribbon just beyond the edge of the bony spiral lamina and adherent to something beneath it. The tectorial membrane can be lifted off in long segments before tearing. The basilar membrane is easily identified as a clear gelatinous layer briding the space between the bony spiral lamina and the spiral ligament. Point pressure on the basilar membrane produces a shallow circular depression. Perforation of the membrane produces a circular hole. These findings indicate that the basilar membrane is not under special transverse tension. The spiral ligament is easily detached from the cochlear capsule but tends to retain its normal position because of the labyrinth fluids. It does not produce a ligamentous pull on the basilar membrane. The basilar membrane varies continuously in stiffness along its length being about 100 times as stiff at the basal narrow end as at the wide apical end. Especially prepared silver crystals .04 mm. wide were introduced into the fenestra to adhere to the membranous and bony structures in order that observations of these structures during acoustic stimulation could be made. Physiologic sound stimuli delivered to the inner ear through the intact conduction mechanism produce a great deal of activity in the cochlea. The cochlear duct vibrates as a unit at right angles to its length beginning with tones above about 20 cps. Below this frequency there are only to and fro pulsations of the labyrinth fluid parallel to the cochlear duct without movement of the duct itself. The lower tone limit of hearing may be related to this physical response of the cochlea. With low frequencies the whole length of the cochlear duct appears to be vibrating but a maximum amplitude is seen at the apical end. As the stimulus frequency is raised above about 400 cycles per second the apical end stops vibrating while active vibration is seen in the middle and basal coil with maximum amplitude in the middle coil. As the frequency is raised further, shorter and shorter lengths of the cochlear duct respond. The response becomes more localized with increasing frequency. Visible vibrations were produced in the basal coil with the equipment used for sounds up to 2,000 cps. in the human and higher in the guinea pig. Vibrations were indicated by the spread of the light points into a line and ceased immediately when the sound stopped. The broad low frequency response of the cochlear duct may be related to the wide masking spectrum of low frequency sounds.

Vibration of the basilar membrane was accompanied by eddy currents in the adjacent fluid. These were striking but their role in cochlear function is not clear. The acoustic response of a simplified model of the basilar membrane showed frequency discrimination and eddy currents similar to those seen in the cochlea itself. These experiments confirm some of the basic observations of Békésy. In the past decade quantitative studies on the mechanics of the cochlea by Békésy have been most valuable in advancing our knowledge of the mechanics of the cochlea in audition. 9 references. 9 figures.—*Author's abstract.*

Experimental Investigation into the Problem of Humoral Transmission in the Cochlea. *Lennart Gisselsson, Lund, Sweden.* Acta otolaryng. Suppl. 82, 1950.

Most investigations of the physiology of the cochlea point towards the presence of a tonal discrimination of the cochlea. Galambos and Davis, however, were the first to present more convincing evidence in favor of this prenomenon. Walzl's paper on the representation of the cochlea in the cerebral cortex and experiments on the electrophonic effect together with the investigation of the stimulation of the acoustic nerve by an alternating sinusoidal current provided further support in this direction. Some forms of resonance in the cochlea also probably play a part as a link in the analysis of vibrations in this organ. To which anatomical structures in the cochlea the resonance is to be assigned is still unknown as is also the manner in which the mechanical energy of sound is transduced into electrical energy.

We know that sound elicits a movement with mechanical energy in the labyrinthine fluids and that on sound stimulation of the ear electrical energy can be recorded in the form of sinusoidal waves from the cochlea or as spikes from the auditory nerve. As the tracings of the potentials recorded from the cochlea practically coincide both in shape and frequency with those of the sounds applied to the ear, Guild and others reason that the transduction of mechanical energy of sound into this form of electrical energy must in principle be a piezo-electric phenomenon. On the other hand, Adrian and co-workers had supposed the cochlear potentials to be of nervous origin. The electrical potentials arising in the auditory nerve during sound stimulation are of another nature. They are action potentials of the same type as can be registered from other stimulated nerves in the body. Even the transduction into this form of electrical energy must in some hitherto unknown manner occur in the cochlea. We do not know if the cochlear potentials are in any way related to the action potentials.

With the exception of a few scanty reports, the transduction of energy in the cochlea has hitherto not been investigated. Already in 1918 Gertz suggested electrochemical factors at work in the stimulation of

the vestibular part of the labyrinth. Later, after the determination of the time necessary for the ear to transduce sound waves into electrical energy, Derbyshire and Davis believed that chemical mediation should be sought in the transformation of energy in the cochlea. But with the exception of Martini and co-workers no experimental attempts were made to verify this assumption. For this reason the writer carried out some experiments in the hope of producing evidence for or against the theory of humoral transmission in the cochlea.

In the experiments described in Chapter 2 it was shown that perilymph from the pigeon, from the guinea-pig, and from the cat is capable of breaking down relatively large quantities of acetylcholine. Moreover, endolymph from the cod, from the guinea-pig, and from the cat must contain some enzyme capable of breaking down acetylcholine, because when endolymph from the cod was added to a solution of acetylcholine, there occurred an acidification of the mixture. This acidification was inhibited when physostigmine was added beforehand to the mixture. The experiments with endolymph from the cat showed that this labyrinthine fluid splits up acetylcholine more rapidly than does perilymph from the same animal. The amount of acetylcholine capable of being broken down by 0.01 ml. endolymph is about 1 γ per 20 minutes at a temperature of 25° C.

Martini and co-workers claimed to have demonstrated a liberation or formation of acetylcholine-like substances in the perilymph in response to sound stimulation of the ear. As described in Chapter 3, however, these results could not be verified in this investigation. Neither in perilymph from physostigminized human, cats, pigeons or guinea-pigs nor in endolymph from guinea-pigs or from cats could any acetylcholine-like substance be demonstrated after the ear had been stimulated 1 to 2 hours by a tone of high intensity.

In the latter part of this study (Chapter 4), electro-physiological experiments were performed. As attempts to record the action potentials from single nerve fibers only demonstrated the technical difficulties of the undertaking, a record was made of the cochlear potentials. Earlier studies by other authors showed that physostigmine has no effect on the voltage of the cochlear potentials. This is, however, not incompatible with a presumed participation of acetylcholine in the transduction of energy in the cochlea. On the other hand, however, substances possessing an inhibitory effect on acetylcholine esterase might be expected to have an effect on the latency of the cochlear potentials. Whether this is so has hitherto never been examined experimentally. A method for recording changes in the latency of the cochlear potentials was therefore devised.

With the aid of this method it was possible to follow fluctuations continuously in the latency of the cochlear potentials. The experiments performed show that physostigmine is capable of producing a consider-

able prolongation of the latency of the cochlear potentials. Of the substances used in the experiments physostigmine had the greatest retarding effect on the latency of the cochlear potentials. Neither physostigmine or neostigmine (prostigmine) prolonged any effect on the latency of the cochlear potentials in atropinized animals. As hexastigmine (HTP) and fluostigmine (DFP) produce no effect until after the elapse of one hour or more, the action of these substances on the latency of the cochlear potentials could not be observed directly. Instead of such experiments acetylcholine was injected into animals whose acetylcholine esterase content had been reduced by the injection of these substances (HTP and DFP) before the commencement of the experiment proper. Acetylcholine then produced a rather transitory prolongation of the latency of the cochlear potentials. Acetylcholine had no apparent effect on the latency of the cochlear potential in animals not pre-treated in this manner.

The falling blood pressure was found to reduce the voltage of the cochlear potentials but to have only a slight or insignificant effect on their latency. Adrenaline, noradrenaline, histamine and atropine produce no definite manifest effect on the latency of the cochlear potentials.

The experiments showed the presence of a quantity of acetylcholine in the endolymph of the same order as in other parts where there is a humoral transmission with the aid of acetylcholine. If acetylcholine is the stimulus of the ending of the auditory nerve in the cochlea, the liberation of acetylcholine should presumably be demonstrable. This was not possible because there is probably tonal discrimination in the cochlea, and therefore the quantities of liberated acetylcholine must be so minute that the methods of today are too crude to demonstrate it. The fact that substances possessing an inhibitory effect on acetylcholine esterase and—if such a substance has been injected into the animal beforehand—acetylcholine are the only drugs tested which seem to be capable of affecting the time it takes for the transduction of sound waves in the cochlea into electrical potentials, argues for the participation of acetylcholine in this transduction. 79 references.—*Author's abstract.*

Mastoid

Indications for Treatment of Acute Otomastoid Processes Based on the Pain Syndrome (*Consideraciónes sobre el tratamiento de los procesos oto-mastoideos agudos en base al sintoma dolor*). *Yago Franchini and Ricardo Bracht.* Día méd. 22: 422-24, March 20, 1950.

Two cases of acute suppurative otitis media with empyema of the mastoid antrum are described in detail. The diagnosis was confirmed by demonstration of the 4 cardinal symptoms. The roentgenograms showed no evidence of osteitis. The intercellular trabeculae were in-

tact and there was only a slight veil over the mastoid cells, most pronounced over the antral region.

In the first case, treatment with penicillin brought acute exacerbation with profuse suppuration and more severe pain. For this reason, operation was performed in spite of the negative roentgen findings in order to prevent the development of complications. In the second case the response to penicillin was more favorable and no operation was performed. This patient had received a combined penicillin (200,000 units every 4 hours) and streptomycin (1 Gm. daily) treatment, and after one week pain and suppuration disappeared. Individual immunologic conditions may have played a part. However, it should be emphasized that early intense application of treatment with penicillin and streptomycin may lead to recovery without the need for surgical intervention. When the roentgenogram shows no bone destruction and only a slight veil over the mastoid cells, the pathologic condition involved is probably cellulitis, which responds to medical treatment even in the presence of abundant suppuration and other symptoms. If symptoms persist in spite of this treatment, even though the roentgenogram is still negative, operation is indicated after waiting a reasonable time for results, in order to prevent complications. In cases of doubt it is best to operate.

Atypical Lateral Sinus Thrombosis. *M. Tamari, A. Kositsky and G. Guemmer, Chicago, Ill.* Eye, Ear, Nose & Throat Monthly 28: 595–98, 605, Dec. 1949.

This is a report of 2 cases illustrating an atypical course of acute otitis complicated by asymptomatic sinus thrombosis, probably attributable to the use or overuse of chemotherapy and/or antibiotic drugs. In both patients the infection in the temporal bones was temporarily retarded, but at the same time the usual signs and symptoms of the mastoid disease and its complications of thrombosis of the lateral sinus were masked by their use. The salient, atypical observations included: (1) absence of pyemic symptoms; (2) intact drum findings; and (3) hearing within normal limits.

The obvious disproportion between the clinical signs and symptoms and the extensive destructive process found at operation in these 2 patients is emphasized. Finally, the roentgenograms of both patients revealed definite bony defects and thus proved to be more reliable than the clinical symptoms in correctly evaluating the disease process and the necessity for intervening surgically. 6 references. 2 figures.—*Author's abstract.*

Middle Ear

The Inter-Attico-Tympanic Diaphragm; Its Part in the Pathogenesis of Otitis in Infants (*Le diaphragme inter-attico-tympanique; sa place dans la pathogénie de l'otite du nourrisson*). *Joseph Lemoine.* Nourrisson 38: 1–64, Jan.–Feb. 1950.

It is well known that in infants, especially in young infants, the typical picture of otitis is rare; the general toxic symptoms are severe as compared to the local signs and diagnosis is difficult. In these cases, antral lesions predominate over those of the tympanic cavity. A study of the anatomy of the middle ear of the infant shortly after birth shows the presence of an inter-attico-tympanic membrane or diaphragm, with a single small orifice. The diaphragm separates the middle ear into two definite cavities, upper and posterior, including the attic, aditus and antrum, and lower and anterior, the tympanic cavity. These two cavities in the infant communicate with each other through the small orifice in the inter-attico-tympanic diaphragm. The presence of this diaphragm tends to aggravate any antral lesion by interfering with drainage from the antrum, but also to protect the lower tympanic cavity from the infection. This represents the most frequent form of latent otitis (with minimal lesions in the lower tympanic cavity) as seen chiefly in infants under three months of age, and associated with general toxic symptoms. If the diaphragm is completely absorbed, as is usually the case in older infants, the otitis is of the usual type. If the orifice of the diaphragm closes completely in the course of a suppurative otitis, the suppuration is confined to the antrum; in some of these cases otoscopic examination may show the diaphragm at the lowest point of its retro-ossicular portion. In some cases otoscopic examination may be entirely negative; this represents true occult otitis. Six cases are reported illustrating these various types. 23 references. 44 figures.

Treatment of Tinnitus by Tympanic Sympathectomy (*Traitement des bourdonnements par sympathectomie tympanique*). *Georges Portmann.* Rev. de laryng., otol., rhin. 71: 1–13, Jan.–Feb. 1950.

Tinnitus can in some cases be treated medically by drugs acting on the sympathetic nervous system. In some cases resection of the tympanic plexus, as proposed by Lempert, may give good results. The author has modified Lempert's technic for this operation, by making a large semicircular paracentesis in the lower half of the tympanic membrane and raising the flap to give access to the tympanic plexus. This operation, however, has not given satisfactory relief of the tinnitis in the majority of cases in the author's experience. His studies have shown that this is due to the fact that the sympathetic nervous system of the

labyrinth is independent of that of the middle ear and originates from the internal pericarotid plexus. A pericarotid sympathectomy, by exposure of the internal or preferably the common carotid artery, has given good results in the relief of tinnitus, although this may be only temporary. If increased pressure of the endolymph is the cause of the tinnitus, decompression by opening the endolymphatic sac, an operation proposed by the author several years ago, may result in relief of the tinnitus. 1 reference.

Tuberculosis and the Effect of Ascorbic Acid on the Middle Ear (*Tuberculosis y acción del acido ascórbico en oído medico*). *Marcelo Cascales.* Rev. brasil de oto-rino-laring. 17: 83–88, Nos. 3–4, 1949.

In examining 450 patients with pulmonary tuberculosis, 24 cases with suppurative otitis media were encountered with perforation of the ear drum, in which the pus escaping from the middle ear showed the presence of the Koch bacillus. All of these patients showed acid-resistant bacilli in the sputum. In 1939, Bertelli reported 2 cases of aural tuberculosis and stated that the rarity of this form of tuberculosis is a clinical illusion. It has been estimated that the incidence of tuberculous suppuration of the ear constitutes from 3 to 5% of all types of aural suppuration. The incidence of aural suppurations in pulmonary tuberculosis has been variously estimated at 1 to 2.4%. Most of the patients in the present series were middle-aged and all except one had a positive sputum.

The hematogenous route of infection assumed by most writers, is possible in infancy, but not in the present series of patients, who had open tuberculosis. In these, the bacilli were probably forced into the eustachian tubes during attacks of cough. The findings suggested rather an antagonism between the tuberculous and pyemic infections than otherwise. Administration of ascorbic acid is conducive to the development of an optimum state of immunity. The protective effect exerted by this vitamin on the mucosae is demonstrated by the great paucity of cases of acute angina, peritonsillar abscess, etc. in tuberculous patients treated systematically with ascorbic acid.

RHINOLOGY

General

The Oncocyte in Nasal Mucous Membrane. *Joseph G. Schoolman, Chicago, Ill.* Otolaryng. 51: 223–36, Feb. 1950.

Attention is called to the occurrence of peculiarly enlarged epithelial cells or oncocytes, in glandular tissue (salivary glands, pancreas, thyroid gland, parathyroid, hypophysis, fallopian tubes, mucosa of the nose

and larynx) and to their not yet fully confirmed occurrence in the liver, testes, and stomach. They occur predominantly in persons past middle age. Their suggestive relation to the cancer cell and their availability for study and observation in surgically removed noncancerous tissues of living patients should aid in determining clinical associations and histochemical reactions. The presence of these cells has been reported also in benign tumors of human organs.

The oncocytes are epithelial cells occurring in glandular tissue. They vary in number from the discrete cell to aggregations constituting adenomas (oncocytomas) and occur throughout the involved tissue. These cells differ noticeably from the normal cells of the organ but resemble closely the oncocytes occurring in different organs. The cells are sharply bounded, their protoplasm is dark and finely granular, less often vacuolized, and their nuclei are partly small and crenated, partly very large and pale and often variously formed. It is thought that oncocytes differentiate from the mature cells of the organ in which they are found, and that in judging them they should be compared with the cells which are normal for that organ and, finally, with the oncocytes of the salivary glands. The oncocytes range mainly along the adjacent blood and lymph channels. It is there, at the base of the cell contiguous to the vascular supply, that the oncocyte transmutation from the normal begins and progresses gradually toward the apex of the cell which faces the lumen of the follicle. Transition stages in the cell have been observed, part normal at its apex, part oncocyte at the base.

A review of 400 sections of nasal mucous membrane revealed the general incidence of oncocytes to be about 3%. In the material from the older age group there was 36% incidence bearing out the association of this cell with senescence. Fifteen per cent of mucosas affected by cancer also contained oncocytes but the group was too small to permit conclusions to be drawn. Having confirmed the presence of the oncocyte in nasal mucous membrane, the author believes that investigation needs still to be done to fill the many gaps in knowledge that are present. Further study of the histochemistry of this cell is indicated. Comparative examination, with the normal cell on the one hand and, perhaps, the malignant cell of adenocarcinoma on the other, may help to locate the oncocyte on the scale between health and disease. 20 references. 9 figures.—*Author's abstract.*

Nasal Sinuses

Sinusitis Maxillaris Chronica. *G. M. H. Veeneklaas, Utrecht, Netherlands.* Helvet. paediat. acta 5: 76–84, March 1950.

Chronic maxillary sinusitis is a common affection of childhood. Of 1,327 new patients who were examined in 1948, 80 (6%) showed an involvement of one or both sinuses. The condition may produce funda-

mentally different symptom complexes. In one instance it may lead to general complaints such as lassitude, irritability, failure at school, bad complexion and a subfebrile temperature. In another group of cases the complaints tended to simulate otorhinolaryngological diseases, e.g., the adenoidal facies, rhinitis, otitis, etc. And thirdly, attention may be directed towards the lungs on account of a persistent nocturnal cough or a chronic bronchitis. Headache is a rare complaint in children. Nasal discharge is often absent.

Transillumination of the sinuses is not a reliable help in the diagnosis in children. Roentgenological examination is indispensable in the diagnosis of the condition. Judgment of the roentgenogram however, when both sinuses are opaque, may be difficult. Other bones of the skull may easily be projected on the sinus. It therefore is helpful to make the roentgenogram while the patient keeps his mouth open and to develop the x-ray film until the clearnesses of the orbitae, the mouth and the sinuses are nearly of the same intensity; a sinus still opaque certainly may be looked upon as being involved.

Therapy embraces such measures as open-air life, penicillin and irrigations of the antrum and the results are satisfactory. Operative procedures are to be avoided as long as possible. 1 reference. 2 figures.—*Author's abstract.*

Isolated Acute Sphenoiditis Causing Meningitis. *Harald W. Ewertsen, Copenhagen, Denmark.* Acta. oto-laryng. 37: 563-67, Dec. 1949.

Two cases of acute sinusitis limited to the sphenoid are reported. Both cases occurred in adults who had been in good health prior to the sudden onset (7 and 2 days respectively) of the initial symptoms, which consisted mainly of mild acute rhinitis attended by headache in the occipital region and severe stiffness of the neck. Case 1 occurred in the pre-antibiotic era and the patient was (insufficiently) operated upon.

In case 2 the patient received penicillin 200,000 units × 8, sulfathathiazole 1 Gm. × 6, and streptomycin 0.5 Gm. × 4. Sphenoidotomy was not considered because the local signs were overshadowed by the effect of a coexisting meningitis; yet the fatal course demonstrates that treatment with antibiotic drugs cannot be substituted for operative intervention. Both of the patients died within 48 hours after admission with symptoms of a thrombosis in the cavernous sinus. Autopsy revealed an empyema in the sphenoid, the other sinuses being normal in both patients.

In every case of unusual nuchal rigidity it is important to make a careful examination of the sinuses by roentgenography and by anterior rhinoscopy with the introduction of a probe, under direct vision, into the ostium of the sphenoid, followed by the procedures required to effect drainage, together with adequate administration of antibiotic drugs.—*Author's abstract.*

Surgery

Bilateral Choanal Atresia. Report of a Case in an Infant and Review of Literature. *Richard W. Hanckel, Charleston, S. C.* Ann. Otol., Rhin. & Laryng. 58: 852–67, Sept. 1949.

Bilateral choanal atresia is a rare anomaly, and was first reported by Otto in 1829. There are 3 types: (1) failure of the nasobuccal membrane to rupture. This obstructing membrane comes to lie 1 to 2 mm. within the choanal cavity and contains only bone (no cartilage) between the mucosal layers; (2) a medial overgrowth of the vertical and horizontal palatal processes. This obstructing membrane also comes to lie 1 to 2 mm. within the choanal cavity but contains both bone and cartilage; (3) the persistence of the nasopharyngeal membrane. This obstructing membrane is attached to the most posterior part of the choanal boundary and neither bone nor cartilage lies between the mucosal layers.

The diagnosis is made by the history of breathing difficulty, the presence of a tenacious mucus in the nostrils, obstruction to the passage of a cotton-tipped probe through the nostril, inability of iodized oil to pass through the nostril as demonstrated by x-ray.

Various surgeons have devised operative procedures utilizing the following approaches: (1) surgical intranasal approach; (2) intranasal cautery to the obstructing membranes; (3) transeptal approach; (4) transpalatal approach. Ruddy (1944) used a U-shaped incision on a 3-year-old child with satisfactory results and this was the procedure followed in the author's case; (5) combined intranasal and oral approach; (6) transnasal approach. Various obturators have been used at the operative site to maintain the patency of the opening. Anesthetics ranging from sedation with barbiturates to ether inhalations have been used. The type of operative procedure used should be determined by the type of obstructing membrane, the age of the patient, and the condition of the septum.

In the author's case the patient was a white female infant about 6 weeks of age. A preliminary tracheotomy was done, and ether was given via the cannula. The transpalatal approach was used. It was necessary to return the patient to the operating room once at the end of a month and again at the end of two months in order to remove exuberant granulations. The tracheotomy cannula was removed approximately four months after insertion. Six months after operation the choanal patency was still demonstrable, no dyspnea was present and the patient was gaining weight.

Comment is made on the following factors: (1) a long period of hospitalization may be necessary; (2) the mucoperiosteal flap may be left open as it usually sloughs anyhow; (3) the author believes that if it is possible, it is better to delay the operation until the patient reaches 6

to 12 months of age, so that the technical procedures will be less difficult; (4) there is no contraindication to frequent bouginage to maintain the patency of the opening. 25 references. 8 figures.—*Author's abstract.*

Surgical Repair of Congenital Choanal Atresia. *J. Eastman Sheehan and Wilson A. Swanker, New York, N. Y.* Laryngoscope 59: 1320–27, Dec. 1949.

Any disease condition which causes asphyxia is deplorable at all ages but it is most perturbing in the initial span of life. Although the causes are many one of them is complete bilateral atresia of the posterior nares (choana). The concensus of opinion concerning the etiology is that the atretic wall is the persistent remains of one or two fetal structures, the bucconasal and the buccopharyngeal membrane. Only after seeing the cyanotic infant can the true gravity of the complete bilateral occlusion of the posterior nares be appreciated. Nursing is impossible.

Verification of the diagnosis is made by indirect visual and digital examination of the nasopharynx. The obstruction can be demonstrated roentgenologically. The condition may be readily differentiated from other obstructions by its location and attachment.

The treatment is surgical intervention through the transpalatine route. The suggested technic is a combination of the Ruddy incision, Neto's fenestration of the hard palate and Blair's treatment of the nasal mucosa. The incision is arcuate, extending across the palate between the posterior foramina with the convexity posterior. The nasal submucosal regions are reached through two fenestrations made in the palatine bones on either side of the vomer just anterior of the posterior border of the hard palate. The atretic wall is removed. The mucosa of the nose is repaired by suture, flap transfer or by skin graft held in place with a mould. 27 references. 2 figures.—*Author's abstract.*

LARYNGOLOGY

Larynx

Solitary Neurofibroma of the Larynx (Report of Two Cases). *Gilbert E. Fisher and John S. Odess, Birmingham, Ala.* Laryngoscope 59: 1345–49, Dec. 1949.

Solitary neurofibromas of the larynx are relatively rare tumors. There have been but 19 such cases reported. The symptom complex presented by patients having this tumor in the larynx is dependent upon the size and position of the growth.

In the majority of the cases reported the diagnosis was made in the third decade of life and the tumor was found more frequently in fe-

males than males. It arises most frequently in the region of the aryepiglottic fold. Its usual appearance is that of a smooth, rounded, solid, yellowish encapsulated mass.

There is a great deal of confusion as to the pathological derivation of these tumors, hence the great variety of names applied to them. The best description was that of Ewing who stated that the tumor is covered by a distinct capsule. The growth is made up of two kinds of tissue, the main tissue being fasciculated with elongated cells and fiber bands arranged in a palisade manner, and the remaining tissue being reticulated with few fibers, irregularly scattered cells and much intercellular fluid. If the growth is entirely removed there is no tendency to recurrence.

In the first case a 75-year-old white man complained of 15 years of progressively increasing dyspnea. Examination was negative except for limitation of movement of the left vocal cord and a pedunculated, small, yellowish nodular mass about the size of a small pea on the upper surface of the base of the left vocal cord. This was removed by direct laryngoscopy using laryngeal cup forceps. No recurrence has occurred after six years. The pathological report was neurofibroma.

The second case was that of a 23-year-old white man who complained of hoarseness and dry cough. Examination revealed a small, yellowish growth on the left aryepiglottic fold adjacent to the left arytenoid. This was removed with direct laryngoscopy using laryngeal cup forceps. There has been no recurrence to date. The pathological report was a tumor arising partly from nervous origin and partly from the sheath of Schwann. 15 references. 1 table.—*Author's abstract.*

Psychosomatic Aphonia and Ephemeral Adductor Paralysis. *Chevalier Jackson, Philadelphia, Pa.* Laryngoscope 59: 1287–98, Dec. 1949.

Psychosomatic laryngeal manifestations usually affect the most conspicuous function, namely, phonation. Of the other eight functions, the tussive is practically the only one thus affected. As shown by Jackson and Jackson, the old adjectives "hysterical," "voluntary," "functional," formerly misapplied to this condition, are semantic solecisms and should be dropped from the literature. As stated by these authors, many of the cases, although not all, originated in ephemeral adductor paralysis. This transitory paralysis, they point out, is due to sudden circulatory disturbance, usually anemic, of the anterior cerebral cortex. In common parlance this condition is often referred to as "knocked speechless," "speech bound," "speech bereft," "dumbfounded," "struck dumb." Although these expressions are common in lay literature, their significance does not seem to have been recognized by medical authors other than those cited. The sudden anemia of the cerebral vessels (including those of the anterior motor cortex) in the minor form of syncope called fainting or swooning, is commonly asso-

ciated with an ephemeral adductor paralysis. This phase, in swooning, passes so quickly into unconsciousness that the adductor paralysis is not ordinarily noticed, but the authors have observed it in the laryngeal mirror in cases of fainting from various causes. When the degree of cerebral vessels (including those of the anterior motor cortex) in the person affected by a terrific sight or a shocking experience notices his loss of power to speak, hence his expression, "I was struck dumb," or "I was dumbfounded," or "I was knocked speechless." In many instances of fainting or swooning, the person affected, after recovering consciousness, will recall the loss of power to speak. Pathologically, the laryngeal condition of failure in adduction in ephemeral adductor paralysis is, in a sense, somal rather than functional, inasmuch as the cells of the anterior motor cortex are deprived of their blood supply. When, however, the psychic impression of inability to speak becomes fixed, as is sometimes the case, a psychosomatic aphonia is established. This is only one of the ways in which this type of aphonia originates. Various forms of suggestion may become fixed. In some cases anxiety over prospect of loss of voice, suggested by acute laryngitis or other incident, may be an etiologic factor. In most instances psychosomatic aphonia is a traumatic neurosis. Physical trauma may or may not have been concurrent, but its effect is through its additional mental impact. In some cases the suggestive physical trauma may have been in the region of the larynx. Psychosomatic aphonia may develop immediately after the psychic trauma or later. The onset is usually sudden, but in some cases it is gradual. When predisposing factors result from overwork, grief, anxiety, worry and other long-continued strains, the memory of any incident referable to the voice, or even the larynx, may result gradually in a psychosomatic aphonia, although often even in these cases the onset is sudden. In some cases the etiologic suggestion may come from loss of voice affecting a relative or even from a vivid account of such a loss. Etiology, pathology, laryngoscopic appearances, symptoms, diagnosis and treatment are considered and illustrative cases are cited. 1 reference.—*Author's abstract.*

Paralysis of the Recurrent Nerve Following Strangulation (*Recurrensparese nach Strangulation*). *Edgar Hennig and Harry Jakobi.* Beih. Zschr. Hals- Nasen- u. Ohrenhlk. 1: 466-69, Aug. 1949.

A man 63 years of age who had attempted suicide by strangulation developed reversible recurrent paresis and psychosis. No such case has hitherto been described. Sulfonamides, luminal and cardiac tonics were prescribed. A tracheotomy was done to relieve dyspnea and stridor. The psychosis and the postieus paresis gradually disappeared. The tracheotomy wound healed well and the voice soon became louder and clearer, but a retrograde amnesia remained. Five weeks after the attempted suicide, the respiratory cleft was still only 6 to 7 mm. Dry-

ness of the throat responded to inhalations. Since the nerve trunk itself was not injured, the paresis was probably due to injury of the individual branches of the nerve caused by upward jerking of the larynx. There were no fractures of the cartilage or other clinically or roentgenographically demonstrable changes. Only the sudden pull of the weight of the body on the larynx could have so injured the recurrent nerve on both sides as to give visible evidence of paresis by the median position of the vocal cords. Many reversible cases of recurrent paresis have been caused by injury to the so-called muscular branch of the nerve, i.e., the motor nerve fibers passing from the recurrent nerve into the different muscles of the larynx. In the present case, retrogression began after a few days. Recovery on the left side preceded that on the right side which had been more seriously injured. 31 references.

Laryngeal Granulomata Following Intratracheal Anesthesia. *Simon Jesberg and Norman Jesberg, Los Angeles, Calif.* California Med. 71: 398–99, Dec. 1949.

During the past 20 years intratracheal anesthesia has been developed to a high degree of efficiency and has proven its value and worth for major surgical procedures. In spite of its tremendous advantages, however, it is not without complications, the principle postoperative untoward sequelae being polypoid laryngeal granulomata. These lesions are not an infrequent complication and develop as a result of laryngeal trauma. They are almost always posterior, the favorite site of attachment being at or near the vocal process of the arytenoid. They are frequently bilateral and are more likely to occur as a result of pernasal blind tracheal catheterization. They may take from two to four months after operation to become clinically evident but should be suspected in any instance of postanesthetic vocal disturbance. They may be treated effectively by removal under direct laryngoscopy with suitable preliminary medication and topical local anesthesia. 10 references. 2 figures.—*Author's abstract.*

The Postlaryngectomy Clinic of the National Hospital for Speech Disorders: A Statistical Study of 300 Patients. *James S. Greene, New York, N. Y.* New York State J. Med. 49: 2398–2404, Oct. 15, 1949.

The first recorded laryngectomy for cancer was performed in 1873. At that time and for many years thereafter, the mortality rate was so high that therapeutic efforts centered mainly on improving operative procedures. Today the mortality rate in laryngectomy is less than 1%, and with improvement in surgical technics interest has been transferred to a new phase of the problem—the postoperative rehabilitation of the patient who has been made voiceless because of the extirpation of his larynx.

While instruments have been devised to make it possible for these patients to speak again, such devices all have objectionable features, and the development of esophageal speech is to be preferred. In a study of over 300 patients treated in the postlaryngectomy clinic of the National Hospital for Speech Disorders, it was found that approximately 80% of patients developed adequate esophageal speech.

The study revealed other interesting facts, among them that the ratio of male to female patients in the postlaryngectomy clinic is approximately 22 to 1, and that over two-thirds of the patients are between the ages of 50 and 70—the latter fact bearing out statistically the observation that cancer of the larynx is predominantly a disease of later middle age. There is some indication also that the disease is more prevalent at the lower economic and educational levels, since approximately three-fifths of the patients in the study had only an elementary school education or less, and approximately three-fifths were laborers of one type or another, one-third being classified as unskilled.

There was a great deal of variability in the patients' response to treatment, some mastering the technic of esophageal speech more rapidly than others, but the average length of treatment in the postlaryngectomy clinic was four months. Approximately 70% of the patients in the study returned to their former work or went into some other occupation. Of the remainder, a number was still under treatment at the time the study was completed, and a number of others had retired. 3 references. 2 figures. 12 tables.—*Author's abstract.*

Pharynx and Nasopharynx

Evaluation of Irradiation of Pharyngeal and Nasopharyngeal Lymphoid Tissue. *Francis L. Lederer, Chicago, Ill.* Ann. Otolaryng. 59: 102–11, March 1950.

Impelled by reports of enthusiastic acceptance, as contrasted by dire warnings of the dangers of irradiation of the nasopharyngeal lymphoid tissue, our own concepts of the problem are presented. There is historical precedence for this attempt, because some 27 years ago, I recorded my experience on this very subject. Then, as now, there was a mass hysteria which threatened to upset the rational scientific thinking of medical men not ordinarily given to believing scientific "bally-hoo." Were I to take my report of 1922 and change the date to 1949, modern concepts of the problem would be represented.

The irradiation of lymphoid tissue for deafness is not new. During the years 1922 through 1924, there were innumerable contributions to the literature dealing with this subject. The papers were divided into two major camps: one advocating irradiation, the other disclaiming against surgery. My discussion was the only negative appraisal to appear. Acknowledgment was made of the possible shrinking effect, but the inability of this form of therapy to act as a bactericidal agent or

to affect lymphoid tissue permanently was noted; also warning was given of the unpleasant sequela of extreme dryness of the pharynx.

In 1939, Crowe and Baylor started a revival of this form of therapy, which in their original communication was directed at the prevention of deafness. This has been followed by a literary inundation advocating this form of therapy for all forms of deafness. Of late, there have appeared several papers dealing with the late effects of irradiation. It is believed that this may be a cause of malignant involvement. It is stressed that the nasopharyngeal application of radium is not a harmless form of therapy and that it must not be repeatedly used without fear of potential injury. Wachowski presents the views of many radiologists, with which I am in accord. Roentgen therapy, using high voltage with filtration sufficient to give a half value layer of 1 mm. of copper, is used through large lateral ports. In this way, all the hyperplastic lymphoid tissue of the pharynx is influenced, not just the 5 to 7 mm., which is the depth of penetration of the beta radiation of the Crowe applicator.

It may be concluded that insofar as can be ascertained, irradiation of the nasopharynx by standardized technics is practically without danger. The method should, however, be used with restraint, and only in those cases which do not present irreversible hearing defects. 39 references.—*Author's abstract.*

Nasopharyngeal Irradiation and Hearing Acuity: A Follow-Up Study of Children. *Stacy R. Guild, Baltimore, Md.* Laryngoscope 60: 55–76, Jan. 1950.

This paper, which was read at the October, 1949, meeting of the American Academy of Ophthalmology and Otolaryngology in a Symposium on Irradiation of Lymphoid Tissue in the Nasopharynx, reports observations made in a follow-up study of school children who were first examined in the school year 1939 to 1940. The report is based on comparisons of the records of the first and of the last examinations of those children who actually returned for re-examination after World War II. The shortest interval between the first and the last hearing tests was 6 years; the average interval was slightly over 6½ years, both for the treated and for the untreated children. The average age of the children at the time of the first examination was 9½ years, and at the time of the last examinations slightly over 16 years. The age range at the time of the first examinations was from 8 to 13 years.

All examinations were made at the hospital, under suitable conditions for careful work; the hearing tests were made in sound-proof rooms. The range of frequencies used in the audiometric examinations was from 32 to 16,384 cycles per second; 14 frequencies were used. The conditions that prevailed at the last examinations were strictly comparable to those under which the first examinations were made. This

point is stressed because otherwise some of the changes that occurred might properly be regarded as apparent rather than as real ones.

The study affords evidence with respect to three problems of otologic interest: (1) normal age changes in the acuity of hearing of children; (2) the effect of nasopharyngeal lymphoid tissue, untreated, on the hearing acuity of children who have good hearing; and (3) the effect on hearing acuity of successful shrinkage of the nasopharyngeal lymphoid tissue, by means of irradiation treatments with radon-containing applicators, of children with certain types of impaired hearing.

In a group of 259 children (518 ears) whose hearing was good at the first examination and who had no throat treatment, either irradiative or operative, during the entire period of the study, a slight average gain in hearing acuity occurred for low tones, as measured by audiometric air-conduction thresholds, and on the average a slight loss occurred for high tones. The gain for low tones occurred consistently in each of the subgroups made of the 259 children by dividing the group on the basis of the four possible combinations of normal or of abnormal tubal orifices at the beginning and at the end, respectively, of the period of observation. Only one subgroup had on the average no loss for high tones during the period of observation; it consists of 53 children (106 ears) whose tubal orifices were abnormal in appearance on nasopharyngoscopic inspection, at both the first and the last examinations. The greatest average loss for high tones occurred in the subgroup of 63 children who had normal-appearing tubal orifices at the beginning and at the end of the study.

A group of 95 ears of children who had impaired hearing only for high tones, either bilaterally or unilaterally, and who were treated by irradiation of the nasopharyngeal lymphoid tissue, showed an average gain for low tones similar to that in the untreated children, in whom it is regarded as normal for the age period, and a slight additional loss for high tones. In no instance of the 52 ears that had an "abrupt" type of high-tone loss was the highest tone that was well heard of a higher frequency at the last examination than it was at the first examination.

The group of 24 ears that had originally a moderate impairment of hearing for all tones, i.e., "flat" audiograms at the 25 to 40 decibel level, had, as a group average, real improvements in hearing acuity for all tones after irradiation of the nasopharynx. Nearly half of them, however, showed either little or no improvement in the audiometric thresholds.

The broad conclusion is reached that previous ideas, widely prevalent, of the effect of nasopharyngeal lymphoid tissue on hearing and of the effect of nasopharyngeal irradiation on impaired hearing, need to be revised in the light of the evidence from the follow-up studies. 15 references. 7 figures.—*Author's abstract.*

Hemangioma of the Lateral Band of the Pharynx and Nasopharynx. Case Report. *W. W. Wilkerson, Jr. and Lee F. Cayce, Nashville, Tenn.* Laryngoscope 59: 1339–44, Dec. 1949.

In determining the diagnosis and methods of treatment of masses of this type, it is important that the following definitions are considered: hemangioma is a tumor composed primarily of blood vessels; lymphangioma has a preponderance of lymph vessels, while an angioma has cells which tend to form either blood or lymph vessels.

A case is presented of a well developed female, age 19. When first seen she was complaining of having had a full feeling in her throat for the past year. As she had had no other symptoms, she delayed having an examination until she saw the growth in her throat. An examination revealed the nares to be essentially negative. The submaxillary glands were moderately enlarged bilaterally. Moderate-sized infected tonsils were present. A mass, mulberry in color, was seen involving the right lateral pharyngeal band extending from the upper third of the tonsil a centimeter below the eustachian orifice. It measured approximately 5 mm. in width and 8 mm. in height. Through the tightly stretched mucous membrane covering the growth several blood vessels and capillaries were seen. These had the appearance of venous channels. A diagnosis of hemangioma was made.

With instruments for ligating the external jugular at hand, if needed, the soft palate was retracted, thereby rendering visible the entire tumor. Using topical cocaine as an anesthetic, the whole mass was electrocoagulated, as well as 2 or 3 mm. of what appeared to be normal tissue immediately surrounding the growth. No bleeding occurred during the surgical procedure or during convalescence. In three weeks the patient was dismissed as cured, having made an uneventful recovery.

Three months later she returned with a pedunculated tumor which had three lobules approximately in the same location as the first tumor. It was creamy white in color and friable upon palpation. Under general anesthesia we attempted to dissect the pedicle from its attachment, but as each lobule was grasped for traction, it became detached from the pedicle. Finally only the pedicle remained. This we dissected from its base on the lateral pharyngeal fold. We then touched the raw area with trichloracetic acid. Little bleeding ensued. The diagnosis of the removed tissue by the pathologist at the second operation was: "Hemangioma of the pharynx with acute and chronic inflammatory changes presumably secondary to ulceration of the pharyngeal mucous membrane." After two years the patient has had no further recurrence. 5 references. 4 figures.—*Author's abstract.*

The Eliminating Function of the Tonsils. *Otto Meyer, New York, N. Y.* Eye, Ear, Nose & Throat Monthly 29: 140–45, March 1950.

The tonsils, being lympho-epithelial organs, are part of the lymphatic defense mechanism whose function is elimination of infection (Roth). They protect the body against generalized infections and especially against the spreading of dental and other infections of the oral and nasal cavities into the blood stream. They further prevent infectious agents which enter through the oral and nasal mucosa (e.g., poliomyelitis virus) from reaching the general circulation. The process of elimination of infection causes tonsillitis which is not a disease sui generis but a reaction to another infection, as is demonstrated by clinical observation and experimental research work of many authors. Removal of dental infections is frequently followed by clearing of a severe reactive tonsillitis without treatment. Therefore, tonsils should never be removed indiscriminately. Russell states: "The tonsil is sometimes blamed and removed for an inflammatory protest at the quality of the nasal sample it receives, when the unfortunate organ should rather be rewarded for the valour of its part in a remedial effort." The majority of tonsillectomies are incomplete, leaving a stump of tonsil tissue covered with scar tissue which prevents any drainage. If not already infected when left, the tonsil stump sooner or later becomes infected by bacteria or viruses entering it, thus being converted into a dangerous permanent focus of infection. In chronic tonsillitis and in infected tonsil stumps the infection often spreads to the jugular veins, establishing a secondary infectious focus which opens directly into the blood stream.

This fact seems to be an important factor in the spreading mechanism of the poliomyelitis virus from the nasal mucosa to the spinal medulla. In the opinion of the author—who had occasion to examine 30 children with acute poliomyelitis, all of whom had infected tonsil stumps and jugular phlebitis—the jugular phlebitis may be the starting point for acute vascular allergy in the blood vessels of the central nervous system in poliomyelitis. Duggan emphasized this factor, stating: "It is more than a mere coincidence that the pathology of acute poliomyelitis is one of venous stasis, capillary stasis, and capillary paralysis, with transudation of plasma, white cells and red cells into the anterior horns. The gross picture is that of congestion and hyperemia. . . . Demyelinization always occurs around a blood vessel, and, like the parenchymal tissues in any organ, the myelin-containing cells are most sensitive to oxygen lack. The final result is a glial scar, usually with a narrowed or obliterated blood vessel in its center. Until now the assumption has been that the glial tissue just proliferated and compressed the blood vessel. It is apparent that here cause and effect have mixed up in the past." Tonsillectomy increases the danger of contracting polio-

myelitis, as has been shown by Aycock in an analysis of 2,857 cases, by Lucchesi and LaBoccetta, and by many other authors since 1910. 29 references.—*Author's abstract.*

Tonsillectomy in the Aged (*Tonsillektomie bei alten Leuten*). *Konrad Fleischer.* Beih. z. Ztschr. f. Hals- Nasen- u. Ohrenhlk. 1: 537–40, Dec. 1949.

A study was made in a series of 129 patients of 50 to 62 years of age to determine whether tonsillectomy in this age period involved any special difficulties or risks as compared with those observed in younger patients. In 71 patients with follow-up studies, no special tendency to surgical complications or postoperative sequelae were noted. Tonsillectomy is therefore justifiable at any age if there are no special contraindications. Although results were most satisfactory when a purely tonsillar affection was present, good results were also obtained in patients with rheumatic conditions. Cure was less frequent in the latter, but improvement followed the operation in many cases, especially in the non-deforming types of the disease. 4 references. 4 tables.

Tonsillectomy as Treatment of Acute Peritonsillitis, with Clinical and Statistical Observations. *V. Seppo Virtanen, Helsinki, Finland.* Acta oto-laryng. 37: 9–73, Supp. 80, Dec. 1949.

"Abscess tonsillectomy is a correct and serviceable measure of treatment which does not involve any greater risks for the patient than other surgical measures. In the treatment of acute peritonsillitis, in all stages of this condition, abscess tonsillectomy is an excellent operation." This conclusion is reached by the author from his study of 379 cases in which tonsillectomy was performed during the acute phase of peritonsillitis.

Peritonsillitis was bilateral in 14.4% and unilateral in 85.6% of cases. Bilateral tonsillectomy was performed in 74.4% of the cases of unilateral abscess. In 96.4% of the cases of bilateral peritonsillitis, bilateral tonsillectomy was performed, while in the remainder, tonsillectomy was done on one side and incision on the other. Operations were performed in the sitting position, using local anesthesia for adults and ether anesthesia for children. Abscess was found in 80.4% of the cases, phlegmon in 9.2%, infiltration in 5.5% and granulations or necrosis in 4.9%. The operative findings revealed that 32.5% of the cases were unsuited for incision because of absence of abscess formation or atypical location of the abscess.

There were no preoperative complications in 364 cases. In this group 95.3% were afebrile four days after operation. Coincidental diseases occurred in 23.4% of this group. One death occurred two weeks after operation. This was attributed to hemorrhage from pulmonary tuberculosis. Two other patients with advanced pulmonary tuberculosis withstood operation well. Postoperative hemorrhage oc-

curred in 6 (1.6%) of the cases. This was controlled in 5 cases by suturing the tonsillar pillars over a tampon and in one case by suture ligature. Operative bleeding was less in abscess tonsillectomy than in interval tonsillectomy. Pneumonia occurred in 1 patient and bronchitis in 5 patients following operation.

Fifteen patients suffered complications before operation. Five of 6 patients with septic fever died. One patient who had no chills, but in whom thrombophlebitis was discovered at operation, recovered. Parotitis occurred in 6 cases; 3 recovered after tonsillectomy and the remaining 3 required incision of the parotid abscess. Three patients exhibited laryngeal edema and phlegmon of the neck and floor of the mouth. These patients required external operation in addition to abscess tonsillectomy. Ligation and excision of thrombosed jugular veins was done in some cases. 340 references.

BRONCHOLOGY

Bronchial Obstruction. *Chevalier Jackson, Philadelphia, Pa.* Dis. of Chest 17: 125-50, Feb. 1950.

Bronchial obstruction, temporary or prolonged, is a universal pathologic occurrence; it is common among the newborn; it affects everyone many times later in life, and it is commonly the terminal phase in slow deaths from any cause. Only the cough reflex prevents us all from drowning in our own secretions. Only the cough reflex prevents extermination of the human race by bronchial obstruction.

The power of bronchial obstruction to cause bronchial and pulmonary disease is threefold. It acts as a primary, a predisposing and a perpetuating factor.

An effort is made to clarify the confusion in the literature due to theory and inference regarding valvular obstruction. Complete obstruction of a bronchus, as shown at necropsy, has been well known since the days of Hippocrates and Galen. The bronchoscope, 26 years ago, revealed the clinical fact that in the living bronchi, normal rhythmic respiratory movements produced valvular types of obstruction that caused emphysema and atelectasis in the respective tributary areas. The mechanism of two of the types was similar to the stop-valves and check-valves common in mechanical engineering, but the most frequently encountered type of mechanism was unknown to mechanical engineers. This newly discovered mechanism was named the "expansile check-valve." It converts the rhythmic respiratory to-and-fro flow of the gaseous contents of the bronchi into a one-way flow. The inspiratory diametric luminal enlargement opens a chink past an obstruction, but the expiratory diametric luminal diminution closes the chink at the beginning of expiration, trapping the air before it can escape. Although the quantity trapped at each expiration is small, repetition 18 or more times a minute soon results in emphysema of the tributary lung, lobe or segment. This expansile type of one-way valve is irrever-

sible. The two types of one-way valvular mechanism known to mechanical engineers, the ball valve and the flapper valve, are reversible, and when they occur in reversed position in a bronchus, they cause atelectasis rapidly. They are often seen to produce atelectasis in a few minutes, whereas absorption of air by the circulation after a stop-valve obstruction usually takes 24 hours or more to cause atelectasis. A flapper valve may cause atelectasis in one lobe and at the same time an emphysema in another lobe or segment. A by-pass valve causes a wheeze heard at the open mouth, not at the chest wall. It is diagnostic of partial bronchial obstruction and is present at some stage in all progressive bronchial disease, including benign and malignant tumors.

The expansile check-valve mechanism is seen at some stage in practically every disease of the lung. It occurs not only in endobronchial conditions, but also in neoplastic, adenopathic and other compression stenoses.

Various causes of bronchial obstruction are discussed. The most frequent are pathologic secretions and exudates that the cough reflex cannot expel because of their greatly increased adhesiveness and cohesiveness. Difficulty of expulsion is also greatly increased by accumulation. Opportunity for accumulation occurs when the cough reflex is fatigued, feeble, inefficient from lack of glottic cooperation, or suppressed by toxemia, alcohol, or drugs, especially opiates and other sedatives. Opiates are the most frequently prescribed frustraters of the vital defense of the lungs. Their routine use as antitussives is one of the most deplorable and widely spread therapeutic errors in the history of medicine.

It was discovered bronchoscopically many years ago that opiates and atropine act powerfully in four different ways in promoting bronchial obstruction: (1) The dessicating effect of these drugs greatly increases the adhesiveness and cohesiveness of pathologic secretions and exudates, and this change enormously increases the difficulty of expulsion by nature's defensive mechanism, ciliary wafting, tussive squeeze and bechic blast; (2) The dessication also favors coagulation into firm plugs; (3) By suppression of the cough reflex opiates give time for accumulation, coagulation and plug formation; (4) By suppressing cough, opiates directly cripple the natural machinery of defense of the lungs. The cough reflexes are the watchdog of the lungs; they drug the watchdog to sleep. It is hard to conceive of a drug better adapted to the promotion of bronchial obstruction.

Peroral synergetic aspiration of the bronchial trees is an important means of prophylaxis. It is easily done with a silk-woven aspirating tube inserted through the laryngoscope, or with a bronchoscope inserted without the laryngoscope. Deep insertion of an aspirating tube is unnecessary; the tussive squeeze will force exudates up into the large bronchi. Chronic bronchitis and bronchiectasis are largely preventable diseases. Prompt arrest of beginning stagnation of pathologic secretions and exu-

dates, when subacute bronchitis lingers after acute infections of the respiratory tract, will prevent chronic bronchitis and bronchiectasis which are so often the sequelae of such acute infections.

By diagnostic bronchoscopy the treatment of bronchial obstruction has been removed from the domain of theory and inference and placed upon a plane with other departments of medicine and surgery in which therapy is based on direct inspection of pathologic tissue changes, laboratory examination of exudates and histologic examination of pathologic tissue specimens. As a means of treatment its close to 100% of successful removals of exogenous foreign bodies gives bronchoscopy a unique position, but exogenous foreign body as a cause of bronchial obstruction is relatively rare. In all other forms of bronchial obstruction the relations of the bronchoscope to treatment are those of a speculum through which treatment may or may not be indicated, according to the pathologic conditions found in the particular case. Two important duties of the bronchoscope in all kinds of cases are to maintain constantly a clear and adequate airway to the alveoli, and to re-establish normal physiologic peroral drainage by ciliary wafting, tussive squeeze and bechic blast. No matter what else is done in the way of operative or nonoperative treatment, the patient will never have healthy lungs as long as stagnation persists. Prevention of stagnation by a series of systematic peroral aspirations of the tracheobronchial tree, as soon as convalescence is established, will greatly aid in restoration of normal peroral drainage by taking the load off the clogged cilia. After operations such as pulmonary resections, or external drainage of empyema, bronchoscopic removal of obstructive bronchial exudates and a series of peroral aspirations are usually of great aid in re-establishment of normal physiologic drainage of the lungs. Such aspirations are easily done by the anesthesiologist, on whom maintenance of a clear airway so largely depends.

In case of a patient with impending drownage in his own secretions, resuscitation by bronchoscopic aspiration is dramatic. 23 references.—*Author's abstract*

Nitrogen Mustard* in the Treatment of Inoperable Bronchiogenic Carcinoma. *Joseph P. Lynch, Paul F. Ware and Edward A. Gaensler, Boston, Mass.* Surgery 27 : 368–85, March 1950.

At present, surgical extirpation of carcinoma of the lung presents the only hope of cure. Unfortunately, approximately 70% of patients with carcinoma of the lung are beyond curative resection when first seen by the thoracic surgeon. Palliation of inoperable bronchiogenic carcinoma with the chloro-ethyl amines has been suggested, and the present report discusses such patients treated with nitrogen mustard. From

* The nitrogen mustard used in this study was supplied by Merck & Co., Inc., Rahway, N. J., through the kindness of Dr. Karnofsky of the Committee on Growth, National Research Council.

experimental studies, it appears that these compounds are not sufficiently selective to kill all tumor cells without destroying other rapidly proliferating tissues. Therefore, treatment is expected to be only palliative.

The dosage schedule recommended by the Committee on Growth of the National Research Council was most frequently used, although larger doses were sometimes used with beneficial results. The toxic effects, which are induced by the same mechanism that produces beneficial results, were not severe and disappeared soon after treatment was stopped. These temporary effects were no objection to the use of nitrogen mustard.

The nitrogen mustards are toxic drugs and certain precautions are necessary during and after their administration. All patients were hospitalized for the course of the treatment and for a varying period thereafter. White blood counts and differential counts are done before treatment, daily during treatment, and for at least two weeks after the last administration of nitrogen mustard. Since the white blood count may continue to fall for as long as two to three weeks after nitrogen mustard treatment has been discontinued, counts are done at biweekly intervals for two weeks longer.

Beneficial effects both subjective and objective were noted. Sixty-nine per cent of the patients experienced moderate to excellent subjective relief, and 54% showed objective evidence of improvement. All types of improvement were temporary. The incidence of palliation was related to the pathologic type of carcinoma. The greatest effect was on the undifferentiated tumors, 83% of which were improved. The effect was less dramatic in the more differentiated tumors.

Nitrogen mustard produced relief and comfort for many patients. The duration of beneficial effect was short. Despite this, pain has been lessened, cough and dyspnea minimized, and convulsions due to cerebral metastases controlled. Nitrogen mustard has the advantage over roentgen ray therapy of systemic diffusion rather than local administration. We believe that the results justify continued use of the drug in the palliative treatment of inoperable symptomatic bronchogenic carcinoma. 36 references. 4 figures. 8 tables.—*Author's abstract.*

Use of Aureomycin in Common Respiratory Diseases. *Edna W. Schrick, Holland, Mich.* J. Michigan State M. Soc. 49: 211–13, Feb. 1950.

It has been the hope of physicians and their patients that some drug would be found to shorten the course of upper respiratory diseases and prevent serious sequelae. This report presents experience in this field with aureomycin. This antibiotic drug was used because of its wide anti-infectious spectrum, its ease of administration and its high degree of safety.

The dosage in this experiment, for infants and children up to 10 years of age, was 25 mg. per Kg. of body weight, in 24 hours (in four doses); for adults, 250 mg. every six hours (1000 mg. in 24 hours).

Dingle's classification (1948) of respiratory diseases was used with several additions. In Group I (the common cold) only 4 patients were treated in this series, due to the fact that the study was done when the common cold is at low ebb. No complications followed the cold, and the upper respiratory infection seemed to be milder and of shorter duration. In Group II (nonbacterial exudative tonsillitis and pharyngitis) 30 patients were seen in all stages of development and treated with aureomycin with the following results: 26 were afebrile in 48 hours and showed improvement, with return to full activity in 4 days. No complications followed these patients who were treated early in the course of their disease. Two cases lasted a week, with temperature dropping by lysis, and gradual improvement was not attributed to aureomycin, as both children took it for only two days. The remaining one had been given penicillin before aureomycin was tried, and it required 2 weeks, 1 on penicillin and 1 on aureomycin, before symptoms completely disappeared. In Group III (acute respiratory disease) 2 children and 2 adults were treated, and their immediate recovery could be attributed to the natural short course of the disease and to a prevention of complications by the use of aureomycin. All patients reported they felt normal in 24 hours after treatment with aureomycin. In Group IV (primary atypical pneumonia) only 1 patient was treated for 5 days on aureomycin, with clinical improvement as shown by reduced fever and cough, but with no x-ray improvement. In Group V (acute infectious croup) 7 cases were studied during a wave of infections of unknown but probably viral etiology and 6 out of 7 were helped after 24 hours of administration. In Group VI (primary bronchitis) 9 patients were given aureomycin; 7 of the 9 patients were children and 2 were adults. Six children and 1 adult did show a striking decrease in coughing within two days and were not coughing one week after onset of illness. In Group VII (otitis media) 2 patients with early catarrhal otitis media were treated with aureomycin and showed a complete subsidence of symptoms within 24 hours. One adult with purulent otitis media failed to respond to aureomycin, and one child with bilateral otitis media improved after one week of combined therapy with penicillin, sulfadiazine and aureomycin. Nausea and vomiting occurred in 11% of patients treated. An important use of aureomycin may be in preparing children for tonsillectomies when they have chronically infected tonsils and adenoids.

In view of the fact that aureomycin apparently shortened the clinical course of the common respiratory diseases and prevented their sequelae, it deserves further consideration and trial.

ESOPHAGOLOGY

Surgical Treatment of Achalasia of the Esophagus. *Forrester Raine, Milwaukee, Wis.* J. Iowa M. Soc. 40: 112–15, March 1950.

The cause of achalasia of the esophagus, frequently called cardiospasm, is not known. We do know that there is a muscle imbalance and a lack of muscular coordination resulting in gradually increasing dilation of the upper part of the esophagus with the lower part of the esophagus at the cardiac end of the stomach remaining normal. Although there is, without question, a nervous element to the initiation and certainly to the exacerbations of this disease, it cannot be treated by psychotherapy with any degree of success.

In a majority of patients the diagnosis was made early by a history of difficulty in swallowing, commonly beginning with cold substances, with hot drinks being swallowed far more easily. The swallowing difficulty finally gets to the point where virtually nothing goes through and there is associated loss of weight, regurgitation of food when lying down and frequently pulmonary complications from aspiration in the bronchial tree. X-ray studies with the swallowing of opaque media reveal a smoothly dilated upper esophagus with a cone-shaped lower end. There is seldom a stricture of the lower end, a 45 French olive dilator usually passing with ease.

Treatment by dilation results in satisfactory improvement in a high percentage of cases. This dilation may be done either with hydrostatic dilators or with large mercury-filled dilators which stretch the cardiac end of the esophagus. In a few patients dilation either cannot be done or such frequent dilations are required that they must be treated surgically. Of the numerous operations devised, a plastic esophagogastrostomy seems to yield the most satisfactory results. The opening between the stomach and esophagus must be made large, well up into the dilated portion of the esophagus, if it is to function properly. The operation may be done transabdominally but it is far more easily performed transthoracically and with present day anesthesia, antibiotic drugs and the improvement in anastomotic technic between esophagus and stomach, it is just as safe as the transabdominal route. 7 references. 2 figures.—*Author's abstract.*

Reference to Current Article

Fine Nylon Tubes for Feeding in Esophageal Carcinoma. *Harry Kirschbaum, Detroit, Mich.* J. Michigan State M. Soc. 49: 314, March 1950.

A Rare Complication of the Operation for Esophageal Atresia. (*Een byzonders verwikkling na operatie wegens oesophagus-atresia*). *J. ten Kate, 's Gravenhage, The Netherlands.* Nederl. tijdschr. v. Geneesk. 93: 3164–66, Sept. 10, 1949.

A 5-day-old male infant was operated upon for esophageal atresia. At first the postoperative course was undisturbed. After four weeks the gastrostomy wound started to leak, and feeding was returned through the gastric tube. The child vomited once. Radiologically a diagnosis of pyloric stenosis was confirmed. The child was operated upon and complete recovery ensued. 3 references. 1 figure.—*M. G. Stronk.*

Anaesthesia for Repair of Congenital Atresia of the Oesophagus. *F. W. Roberts, Johannesburg Hospital, Johannesburg, South Africa.* South Africa M. J. 24: 167–72, March 1950.

The incidence of atresia of the esophagus, with or without esophagotracheal fistula, is much more common than is usually supposed. Some figures show an incidence of 1 in 2600. Many cases are missed, the infant death being recorded simply as bronchopneumonia. The commonest type shows a blind upper esophageal pouch, atresia of the central portion, and the lower end communicating with the trachea. The condition is fatal unless relieved by surgery. Two forms of surgical operation have been performed: anterior esophagoplasty and intrathoracic esophageal anastomosis. Surgery has been successful only in the last decade, but the number of operations performed and the survival rate are rapidly increasing.

Early diagnosis is essential; the history of excessive pharyngeal mucus, choking and cyanosis at every feed is typical. Inability to pass a stomach tube, and the radiologic demonstration of the holdup of lipiodol will confirm the diagnosis. Barium should not be used. Preoperative preparation includes: (1) intravenous fluids; (2) postural drainage and pharyngeal aspiration; (3) possibly bronchoscopy; (4) chemotherapy.

A review of the literature shows that, whereas local anesthesia is adequate for minor procedures, opinions differ as to the best anesthesia for intrathoracic operations. A few writers report good results with local anesthesia. Some have used both and comment favorably on the advantage of general anesthesia—notably freedom from crying and straining. Even the enthusiasts for local anesthesia point out that it is useful to have an anesthetist to aspirate mucus from the pharynx and to inflate the lungs with oxygen under positive pressure. The author emphasizes the theoretical advantages not only of general anesthesia, but also of endotracheal intubation and controlled respiration in securing freedom from paradoxical respiration and mediastinal flap, and pro-

ducing the optimal conditions for the delicate surgical maneuvers. He points out the disadvantages of positive pressure.

A series of 8 cases in the author's own experience is reported. One infant in whom the diagnosis was late and who was given barium, died before operation. Two patients were anesthetized with N_2O, O_2 and ether, by Ayres technic of open endotracheal intubation. In both, the mediastinal flap and paradoxical respiration were troublesome and interfered with careful surgical technic. Both these infants died. In 5 infants closed circuit anesthesia was used, with small doses of curare and CO_2 absorption to produce apnea, and respiration was manually controlled. One of these, given ether because cyclopropane was not available, died eight hours after operation without regaining consciousness or adequate spontaneous respiration. The other 4 all received cyclopropane as the anesthetic agent, and all were in good condition at the end of the operation, showing no signs of residual curarization. One died the following day, another three days after operation, and 2 are alive and well—feeding normally. One of the successful cases dates from June 1948, the other from May 1949. 16 references.—*Author's abstract.*

Stricture of the Esophagus Associated with Operation for Duodenal Ulcer. *Gerhard D. Straus, Milwaukee, Wis.* Arch. Otolaryng. 51: 165–71, Feb. 1950.

Two cases of benign esophageal stricture complicating duodenal ulcer, one appearing after vagotomy and the other appearing after gastric resection, are presented. The thesis is presented that the presence of inflammatory disease in the upper part of the abdomen with the superimposition of surgical trauma to the esophagus or stomach may have resulted in thrombophlebitis, fibrosis and stricture of the esophagus.

The treatment, as previously indicated, is endoscopic bougienage followed later by bougienage over a thread guide. A bland diet, avoiding irritants such as alcohol, is prescribed. This complication of duodenal ulcer and operation is sufficiently common so that when it occurs the attending surgeons should accept it as an organic disease process and institute therapy immediately. 12 references. 2 figures.—*Author's abstract.*

Miscellaneous

Plasmocytoma. An Unusual Case with Progressive Involvement of Waldyer's Ring and the Larynx, Bronchus and Pleura. *Walter L. Mattick, Buffalo, N. Y.* Arch. Otolaryng. 51: 263–71, Feb. 1950.

In 1935, Mattick and Thibaudeau reported a case of plasmocytoma of the nasopharynx and larynx, then the twentieth case on record in medical literature. Now, Mattick reports a second case and mentions

a third case observed here, a total of 3 cases in over 68,000 admissions to the Roswell Park Memorial Institute.

This second case is specifically dealt with in the Archives of Otolaryngology of March 5, 1950 and is that of extra-medullary plasmocytoma with successive involvement of Waldyer's ring (nasopharynx, tonsil, base of tongue), epiglottis, larynx, trachea, bronchus and pleura over the years 1943 to 1947. Suggestive early invasion of bone was noted late in the course, as were the tracheal and bronchial findings, but the usual biochemical findings of multiple myeloma were absent. This case has been reported in the Tumor Registry of Otolaryngologic Pathology of the United States Army Medical Museum. Photos of the gross tumors in larynx, trachea and bronchus as noted on bronchoscopy and autopsy, chest x-rays and photomicrographs of the lesion are shown. Only one similar case has been reported in medical literature by A. Heind. He gave the pathologic picture of plasmocytoma with successive involvement of the nasopharynx, nares, conjunctiva, trachea and bronchus. No osseous or lymphatic involvement was noted in his case.

According to current concepts, the extra-medullary plasmocytomas are classified with the lymphomas. Bone metastases in some cases, with ultimate development of the typical picture of multiple myeloma, have been reported on numerous occasions. The reason for considering such metastatic spread as arising from an extra-medullary focus rather than multiple myeloma in bone metastasizing to the viscera, is the presence of a long, latent period—in some cases 15 years. Such a latency would be difficult to assume for multiple myeloma where the life expectancy is generally less than two years. Metastasis via the pterygoid, pharyngeal and paravertebral venous plexuses is suggested in explanation of such distant involvement rather than an apparent downward extension or gravitary implantation along the respiratory tract. A third, more recent case apparently started in the right bulbar conjunctiva and orbit with resultant death by multiple metastasis, notably to vertebra and ribs, thus tending to substantiate further the theory of paravertebral venous extension. 6 references. 6 figures.—*Author's abstract.*

Lethal Granulomatous Ulceration Involving the Midline Facial Tissues. *Henry L. Williams, Rochester, Minn.* Ann. Oto., Rhin. & Laryng. 58: 1011–54, Dec. 1949.

A review of the literature on lethal granulomatous ulceration of the midline facial tissues of the so-called idiopathic type is presented together with reports of 3 cases.

Pathologic study of these cases and a review of similar cases indicated that idiopathic facial granulomas frequently were not localized disorders but that, in addition to the destructive facial lesions, diffuse disease of the arterial system and capillary bed was present. These lesions consisted of periarteritis nodosa, necrotizing arteritis, granulo-

matous formation and the development, in one case, of lupus erythematosus disseminata.

Extensive pathophysiologic investigation has shown that a stereotyped reaction of the peripheral vascular bed, consisting of arteriolar spasm with dilatation of arteriole and venule, is common to inflammation in the widest sense of the word, which includes the allergies and the so-called collagen diseases. Ricker has presented evidence that such a reaction cannot occur in the absence of autonomic nerves. In other words, this stereotyped vascular reaction is a fundamental part of the physiologic mechanism by which the body resists stress in its external or internal environment and by which it tends to restore physiologic equilibrium or homeostasis. The reaction occurs whether the stress is produced by atmospheric pressure changes or changes in temperature, by the invasion of micro-organisms, by the injection of nontoxic protein material or by changes in the chemical or hormonal composition of the tissue fluids.

This physiologic mechanism, called by Petersen the "autonomic system," is made up of three functionally inseparable parts: (1) the semipermeable cell membranes at which, and the tissue fluids in which, the physicochemical reactions take place; (2) the hormonal system by which such reactions are speeded, and (3) the autonomic nervous system by which such reactions are localized and directed. Any change in the function and activity of one part of this triad immediately involves modifications in the other two, thus presenting a synchronized complex action of the entire system. The capillary bed is of necessity involved in any reaction of the autonomic system. Normal variations in the tonus of the blood vessels occur simultaneously in the whole body or in a large part of the body.

An abnormal type of reaction of the vascular bed to stimuli from the autonomic system is spasm. Spasm may be limited to a region, tissue or organ of the body or even to one artery. Spasm in this sense is always a localized phenomenon, a pathologic occurrence. Ricker demonstrated that a normal animal reacted to severe local injury with localized arteriolar spasm and capillary dilatation. It is known that certain persons react maximally in this manner to stimuli which in the case of a normal person would produce a mild reaction; a tendency develops toward reaction to stimuli to which a normal person would not react, and reaction to degrees of stimulation which would not provoke reaction among normal persons. This hyperactivity appears to be inherited as a constitutional tendency which depends on an inherited lability of the autonomic system and is known as "autonomic dysfunction" or "allergy." The reaction is limited to a region, a tissue or an organ. Arteriolar spasm and capillary dilatation compose the fundamental reactions common to all types of autonomic dysfunction or allergy. The result is a sludging of the blood and localized anoxia followed by injury

to the cells of the tissue supplied by the involved capillary loop and the release of such substances as histamine, heparin, necrosin and leukotaxene, depending on the type of cell injured. This results in the formation of the allergic wheal, allergic edema or allergic necrosis, depending on the extent and degree of the injury. An antigen-antibody mechanism may or may not be present. When present it is a secondary phenomenon.

As a result of this review of the literature a new working hypothesis for allergy based on phylogenetic development is suggested. Physical Allergy: the allergic "wheal" is produced as a result of injury to the cell which in turn has resulted from the reaction of the peripheral vascular bed. No antigen-antibody mechanism need be present. Tissue or Bacterial Allergy: antibody primarily remains fixed to the cells but may occur as a so-called by-product. At times there may be some antibody in the circulating "humors." Humoral or Antigen-Antibody Allergy: circulating "humoral" antibody is characteristic. This may be of the univalent blocking type. Sensitizing antibody may be present, fixed to the cell. This hypothesis avoids the dilemma of considering identical clinical pictures as being in some fashion of different etiology because an antigen-antibody reaction is present in one instance but not in the other.

The capillary and arteriolar reactions are functional disorders and can be observed only by means of biomicroscopy. While the allergic reaction of the peripheral capillary bed is primarily functional, it may lead to organic change, possibly by virtue of the anoxic conditions produced, possibly by enzymatic activation (hyaluronidase). The earliest organic change observed is fibrous degeneration of collagen in the walls of the capillaries and in the media of the arterial walls of the larger vessels. It was because of this reaction of collagen that Klinge first termed these disorders the "collagen" diseases.

The hormones of the anterior pituitary-adrenal cortex are known to control electrolyte balance, carbohydrate metabolism and capillary permeability; they seem to control the production and transportation of antibodies and might well be termed the "master hormones" of autonomic function or homeostasis. It would seem reasonable to suppose, therefore, that some disorder of the mechanism which stimulates the anterior pituitary gland, some disorder of the anterior pituitary gland itself or of the adrenal cortex might be responsible for the failure of the adaptation mechanism in a localized area to advance beyond the shock stage of the alarm reaction as described by Selye, and might be the background for autonomic dysfunction or allergy. Since evidence suggests that idiopathic granuloma of the midline facial tissues is an instance of autonomic dysfunction or allergy of the granulomatous and necrosing type, it was felt that the use of anterior pituitary or adrenal cortical hormone might produce a favorable effect. The use of Ken-

dall's extract of the adrenal cortex produced an equivocal effect in one case. It was felt, therefore, that a supply of more effective material would have to be obtained before this hypothesis could be tested. 56 references.—*Author's abstract.*

Some Remarks on the Behaviour of the Inner Ear in Intracranial Tumours. *A. Laskiewicz, London, England.* Acta. oto-laryng. 37: 433–45, Oct. 1949.

The importance of cochleovestibular examination in the beginning stages of intracranial tumors may be summed up in the most characteristic symptoms: vertigo of a moderate degree (lateropulsio, tactile vertigo, spontaneous nystagmus, bilateral hyperexcitability of the labyrinth to calorie test with a distinct hypoexcitability of the posterior canal to rotatory stimuli. In addition to conjugate deviation of the eyeballs, directional preponderans nystagmus and labyrintho-cerebellar symptoms, the author discusses disturbances of hearing, such as gradual loss of hearing, and reduction of high tone limit with marked shortening of bone conduction and absence of recruitment phenomenon. The audiogram tends to decrease rapidly, paralleling the degree and duration of increased intracranial pressure. These symptoms depend on the nature of the neoplasms, their location and their rate of growth.

The author gives a description of the behavior of the inner ear in tumors of the anterior, middle and posterior cranial fossa, using the Brünner classification, and he presents 3 of his cases in which the intracranial tumors involved the petrous bone. These are: neurofibromatosis (von Recklinghausen), glioblastoma of the cerebellopontine angle extending into the internal auditory meatus and sarcoma spinocellular basceos cranii and cerebelli infiltrating both VIIIth and VIIth nerves and the inner ear. 35 references. 3 figures.—*Author's abstract.*

A Case of Acoustic Neuritis in Heerfordt's Syndrome (*Un cas de névrite acoustique dans le syndrome de Heerfordt*). *H. Koumrouyan, Berne, Switzerland.* Acta oto-laryng. 38: 45–55, Feb. 1950.

This paper reports a case of Heerfordt's syndrome in a man 30 years of age. In this case facial paralysis, which is a common symptom in this syndrome, developed before the characteristic bilateral enlargement of the parotid glands. This was accompanied by bilateral deafness and tinnitus. Audiograms showed that the deafness was due to acoustic nerve neuritis. In a review of the literature, the author found only 5 cases of Heerfordt's syndrome in which deafness was a symptom, and in only 2 of these was there evidence that this was due to acoustic nerve neuritis. In the author's case the deafness persisted six months after onset and showed no evidence of improvement. 33 references. 3 figures.

Reference to Current Article

The Treatment of Bell's Palsy with Histamine. *D. A. Skinner, Newark, Ohio.* Ann. Otol., Rhin. & Laryng. 59: 197–204, March 1950.

A Case of Generalized Lipoidosis of the Temporal Bone Type Hand-Schüller-Christian's Disease. *Johs. Isingrud, Oslo, Norway.* Acta oto-laryng. 37: 516–522, Dec. 1949.

The main points in Hand-Schüller-Christian's disease are mentioned: the pathogenesis, the variation of the histologic picture through 4 stages, the larger group of diseases comprising 3, of which Hand-Schüller-Christian's disease is one,—and the symptoms are summarized. This rare disease may affect the temporal bone and simulate otitis as the first sign. Destruction of the temporal bone runs a symptomless course until progression outward or inward is found. The destruction outward as a rule occurs through the bony external meatal wall with the forming of granulation tissue in the auditory meatus leaving the tympanic membrane untouched in most instances, but it may as well penetrate the cortex of the mastoid or the zygomatic process. The destruction may also involve the pars petrosa. At any stage of the disease there may be infection which may prove a grave complication to a pre-existing bone destruction. In many instances the diagnosis will be made on biopsy from granulation tissue in the external meatus.

One case of the Hand-Schüller-Christian's disease type with generalized lipoidosis is reviewed, the lesions also being localized to both temporal bones, simulating otitis. On bilateral operation destruction and a perforation of the bony meatus are found. By x-ray examination of the bones a clue is found for the diagnosis. A temporary improvement was found following x-ray treatment except for the temporal bone. A deterioration occurred, ending fatally with liver disease. Pathologic findings showed xanthomatous alterations, mainly visceral, with destruction of the temporal bones. A progression was noted histologically, the lesions showing the type of eosinophilic granuloma at the time of operation, having changed into lipoid xanthomatosis at autopsy. 15 references. 3 figures.—*Author's abstract.*

Otogenic Non-Purulent Encephalitis. *G. V. Th. Borries, Copenhagen, Denmark.* Acta oto-laryng. 37: 483–97, Dec. 1949.

In this paper a complete monographic survey is given of our present knowledge of the etiology, pathologic anatomy, symptoms and treatment of this disease based on 73 cases published in the literature, with exclusion of all cases with miliary purulent collections and all cases which were complicated by head injuries, sinus thrombosis, subdural and extradural abscess.

The otogenous nonpurulent encephalitis was for the first time pointed out as a special disease by Borries (1921). Some years later, Adson (1924) published cases of "pseudo-brain abscess" and many authors, up to the last years, reported cases of this disease without any diagnosis. Several patients have been brain-punctured indiscriminately because the surgeons, unacquainted with the existence of the nonpurulent encephalitis, thought that a negative puncture necessarily meant an abscess missed. Obviously this disease represents a missing link in the series of otogenic brain complications usually set up.

In addition to the pre-abscess encephalitis, another form of nonpurulent otogenic encephalitis exists which differs from a developing brain abscess by having a special tendency to remain nonpurulent. In other infectious diseases (whooping cough, influenza) a form of encephalitis occurs which has a tendency to remain at the nonabscess stage. It is a fact that there are pronounced cases—not abortive but fully developed, with hemiplegia and aphasia—in which brain abscess is not found by brain puncture, in which leptomeningitis is excluded by the normal spinal fluid, and in which the patient frequently recovers. If the patient dies, autopsy reveals encephalitis but no abscess. In such a case the cause of death is encephalitis, and it would be incorrect to say that he died of an initial stage of brain abscess.

The symptomatology is characterized by the syndrome of abscess symptoms without abscess (Borries) but a special group is formed by the symptomless or nearly symptomless cases. Optic nerve changes are frequent. Symptoms of increased endocranial pressure are not uncommon, but no instance of death from respiratory paralysis has yet been recorded.

The spinal fluid shows, on the whole, the same features as in brain abscess. The dissociation syndrome of Borries has been observed by many authors so that in this respect, too, the nonpurulent encephalitis resembles the brain abscess. The distinction from brain abscess is the most important point in the differential diagnosis. For this we have very little evidence, but the following observations may be of practical value: a very acute onset with high fever and marked disturbances of the sensorium, especially in the course of an acute otitis, is much more suggestive of encephalitis than of brain abscess.

As a rule, mastoid operation with extensive craniotomy is indicated. The question is whether the craniotomy should be followed by brain puncture or ventriculography or not. If the symptoms are not very pronounced, it is reasonable to stop at the dura and to postpone further procedures for a few days. In the meantime, the patient is treated with sulfonamides, penicillin or other antibiotic drugs, dehydration, etc., and kept under careful observation. Should the clinical picture not improve, or even get worse, further procedures may be necessary. The question then is—brain puncture or ventriculography? The clinical

view of this matter is at present in a period of transition, the brain puncture being more and more replaced by ventriculography. In future the latter will probably be used as the routine method in all cases with focal brain symptoms. The prognosis is good; even in apparently hopeless cases with aphasia, hemiplegia and coma the patient may recover. Among the 73 patients only 5 died. 79 references.—*Author's abstract.*

Otogenous Edema of the Brain. *Hans Brunner, Newark, N. J.* Ann. Otol., Rhin. & Laryng. 58: 997–1012, Dec. 1949.

Otogenous edema of the brain can not be considered the forerunner of an acute or chronic brain abscess. It must rather be evaluated as a clinical entity, the pathology of which is not exactly known. The author believes that the brain edema is caused by a serous inflammation of the brain and meninges. The serous exudate may enter the brain, causing an inflammatory brain edema, or the spinal fluid within the subarachnoid spaces, causing a serous meningitis. The reason for the accumulation of fluid either in the subarachnoid spaces or in the brain is not known. The serous exudate may cause damage to the brain tissue. However, these changes do not advance to the formation of an acute brain abscess or a phlegmonous encephalitis, because otogenous brain edema either resolves or persists as such for a long period of time, causing a cerebral hypertension which may eventually be fatal. This concept does take in consideration the eventual occurrence of a nonpurulent encephalitis, yet the surgical diagnosis of "brain edema" seems preferable because the term "nonpurulent encephalitis" implies a microscopic diagnosis which is not feasible in the majority of these instances.

The diagnosis of otogenous edema of the brain is rarely made prior to the operation, yet the correct diagnosis eventually can be made although the differential diagnosis against brain abscess and serous meningitis is difficult. The treatment aims at the removal of the focus of infection and at the decompression of the brain. 32 references.—*Author's abstract.*

Disturbances of the Nervus Stato-Acusticus and Other Cranial Nerves Following Solar Irradiation (*Störungen des Nervus statoacusticus und anderer Hirnnerven nach Sonnenbestrahlung*). *Walter Eckel, Munster, Germany.* Beih. Hals- Nasen- u. Ohrenh. 1: 544–47, Dec. 1949.

Two cases are described in which a sudden vestibular syndrome developed following exposure to severe heat and sunlight. In the first the syndrome included deafness and hypesthesia of the trigeminus, extensive acrocyanosis and a large number of erythrocytes in the cerebro-

spinal fluid. After a few weeks the dysfunction of the cochlearis and trigeminus retrogressed, and then the vestibular syndrome and acrocyanosis, but examination a year later still revealed spontaneous nystagmus with bilateral caloric irritation of the vestibularis. The hearing on both sides was normal, but a slight acrocyanosis of the hands persisted.

The second case indicates that such a syndrome may also develop after a period of latency, and following repeated exposure. This patient, a girl 18 years of age, suffered her first symptoms shortly after exposure, with severe headache, vertigo, nausea, fainting spells and contractures. Almost a year later she was again exposed to severe heat and sunlight and the same symptoms developed, followed after a few days by a state of great excitement, vertigo, diplopia, and later by paralysis of the left facial nerve, as well as gustatory disturbances, anisocoria and oculomotor disturbances. Hearing was normal. These symptoms subsided after a few weeks. Nine months later a fine nystagmus in various directions was still present. It is emphasized that the symptoms in these cases might lead to suspicion of brain tumor. Syphilis was excluded by a negative Wassermann reaction, and there were no signs of arteriosclerosis or leukemia. Also, other toxic degenerative changes could be excluded. There had been no infectious disease. The lesions in these cases of sun or heat stroke consist of reversible vascular processes of a severe type. It is suggested that sunstroke may contitute a predisposing factor. It is emphasized that the transitions between functional circulatory disturbances and organic lesions are fleeting.

In both of the present cases exposure to the sun while swimming led to Ménière's disturbance of the cochlearis and vestibularis, associated with involvement of other cranial nerves. This syndrome is attributed to central circulatory disturbances, presumably diapedetic bleeding. 22 references.

Chronic Cholesteatomatous and Chronic Cholesterinic Otitis. *B. Simonetta, Florence, Italy.* Acta. oto-laryng. 37: 509–15, Dec. 1949.

Cholesteatoma is generally understood to mean a mass composed of cornified squamous epithelial cells, arranged in concentric layers, mixed with degenerated leukocytes, lipoid droplets and cholesterin crystals. This structure, to which J. Müller gave the name of cholesteatoma, has had the singular good fortune to be accepted by all authors without discussion and without any systematic control on a large number of cases. I have examined histologically a very large number of cholesteatomas, and although I have almost invariably detected lipoid droplets among the epithelial lamellae, I have never managed to determine crystals of cholesterin in them.

The negative findings perplexed me considerably, conflicting as they

did with the hitherto universally accepted notion; on the other hand my negative findings were accepted with some reserve because the cholesteatomas were never sectioned completely and in series, and some doubt therefore remained as to whether or not some of the sections which were inevitably lost had contained small quantities of cholesterin. In two cases of large cholesteatomas of the mastoid (each bigger than a nut) the cholesteatomatous masses in their entirety were subjected to chemical analysis, and this latter did in fact reveal the presence of cholesterin, but in such minute traces as to be quite negligible in practice.

On the other hand, whoever has had occasion to operate in a number of chronic otitis cases will have made a further observation, and since this manifestation, although rare, is not exceptionally so, it seems strange that it has not been studied. On opening up the mastoids of chronic otitis patients, one occasionally finds that the mastoid cells (by involvement sometimes of the entire mastoid, but more often of the peri-antral zone alone) contain a dense yellow-brown fluid, with an abundance of shining crystals with the characteristic microscopic appearance of cholesterin. On rare occasions both manifestations occur in the same individual; cholesterin exudation in the peri-antral cells and cholesteatoma in the antrum. In a few cases I found a large cholesteatomatous mass which filled the greater part of the mastoid, and which, instead of bearing the characteristic mother-of-pearl appearance, was dark brown in color. Only in these cases did the histologic examination show masses of degenerated epithelium containing cholesterin crystals; it is probable that, in such cases, the cholesteatoma, in its progressive growth, had eroded the walls of peri-antral cells which contained a cholesterin exudation, and that secondary fusion of the two formations had consequently occurred. Also, in microcholesteatomas, often contained in auricular polypi, the cholesterin crystals are contained within the fine mesh of the connecting web (and often surrounded by groups of giant cells) but they are never contained within the conified epithelial inclusions, with which they assume, at the most, relations of simple proximity.

In conclusion, in addition to chronic cholesteatomatous otitis, there also exists chronic cholesterinic otitis (or, perhaps better, otitis with chronic cholesterinic mastoiditis), in which traces of cholesteatoma in the strict sense are not found, but in which the mastoid cells are full of an exudation very rich in cholesterin. The cholesteatoma, on the other hand, is devoid or almost devoid of cholesterin. There seems to be no relation between the chronic cholesterinic otitis and the lipoidosis types of Christian's syndrome; the differences are many, even though some confusion may appear possible in certain cases. 2 figures.—*Author's abstract.*

Malignant Myoma of the Tongue (*Malignes Myom der Zunge*). *Joachim Picroth.* Arch. f. Ohren- Nasen- u. Kehlkopfh. 155: 627–38, Heft 6, 1949.

Myoma of the tongue is extremely rare. Following a review of the literature, a case is described in which the symptoms began with disturbances in deglutition and an apparently progressive constriction of the esophagus. Examination of the tongue at this stage yielded negative findings, but revealed a swelling of the submaxillary gland. The diagnosis at that time was Mikulicz's disease. Some months later laryngoscopy failed because of trismus. The dysphagia increased and the patient complained of shortness of breath and difficulty in speech. Following roentgen treatment the swelling of the gland retrogressed considerably but it recurred shortly after these treatments were discontinued. The patient seemed normal otherwise and dyspnea was now insignificant. He could take liquids but speech continued to be difficult and slow. The roentgen treatment was resumed, but examination now revealed a large tumor at the base of the tongue, and the rays increased the swelling. The tip of the tongue now extended out of the mouth and the patient suffered from severe dyspnea. A superior tracheotomy was performed. Two days later the patient developed pneumonia and died of heart failure. Autopsy revealed a nodular mass at the base of the tongue the size of a goose egg. The lymph nodes on both sides of the internal jugular vein were swollen, especially on the right side. On section they were whitish and with no circumscribed nodular infiltration, thus excluding lymphosarcoma. Both tonsils had been flattened by the tumor but were not infected. On the upper left margin of the epiglottis on the lingual aspect there was a lentil-sized appendage covered with mucosa. The mucosa on both sides of the laryngeal orifice was defective and grayish green down to the posterior commissure of the vocal cords. A dense whitish membrane covered the latter and extended to the tracheotomy opening. The surface of the tumor was dry and rough. Lingual tumors rarely attain such a size. The diagnosis was leiomyoma developing in the striate lingual muscle. The various pathogenetic theories are reviewed. The infiltrating growth of the tumor proved its malignancy but the histologic findings were not those characteristic of myoma in general. 29 references. 2 figures.

Respiratory Disturbances During and Following Goiter Operations (*Ueber Störungen der Atmung während und nach der Kropfoperation*). *H. Florcken, Frankfurt a/M, Germany.* Chirurg. 20: 585–88, Nov. 1949.

Changes in the position and shape of the trachea due to the presence of goiter can be demonstrated with the aid of roentgenography, laryngoscopy and tracheoscopy. Sagittal and transverse exposures will yield the most helpful roentgen images. In cases of severe tracheal

compression, the stridor audible before operation becomes worse during the intervention. With careful and prompt but not hasty operation, the substernal portion of the goiter can be liberated and the stridor will subside. If it should still persist, traction on one or both halves of the goiter may relieve the respiratory distress until the goiter can be removed. In placing patients on the operating table, the head should be adjusted to the most comfortable position for respiration; intervention may be more difficult but it is worthwhile nevertheless. When the trachea collapses following removal of the goiter, a silk suture may be threaded extramucosally through each side of the tracheal wall and then passed in back of the sternocleidomastoid through the skin to be tied over a gauze pellet, in order to spread the tracheal walls and thus restore the lumen. These sutures can be removed after six to eight days. A flexible intubation instrument has also been devised by Korth to facilitate removal of the goiter.

Some cases of pneumonia have been attributed to anesthesia of the trachea. Postoperative dyspnea may be due to pressure on the trachea by a hematoma. If the latter is suspected a revision of the wound is indicated.

Nine cases are described in detail to illustrate some of the other complications encountered in goiter surgery. Stridor may not develop until after the operation, resulting in bilateral posticus paralysis. This will often respond to injection of calcium, but may require tracheotomy. Bilateral paralysis of the recurrent nerve occurs in some cases. In one case of recurrent nerve paralysis, in which operation had to be repeated, a preoperative unilateral posticus paresis became bilateral after the operation, coincident with an abrupt fall in the blood calcium. In another instance, laryngospasm developed during operation and responded temporarily to intubation but finally required a tracheotomy. In 2 other cases, following a unilateral paralysis of the recurrent nerve, bilateral posticus pareses developed, one of which required tracheotomy. With or without unilateral injury to the recurrent nerve, unilateral or bilateral posticus paresis may develop, occasionally necessitating tracheotomy. The latter interferes with asepsis and should therefore be avoided unless absolutely indicated.

Many of these disturbances are attributed to sympathetic nerve connections with the posterior superior ramus of the posterior cricoarytenoid muscle. Thus ligation of the inferior thyroid artery may be followed by posticus paresis even without direct injury to the recurrent nerve. Transitory injury to the parathyroids may lead to adductor spasm. A very low blood calcium indicates latent tetany. In contradistinction to some writers, the author recommends ligature of the inferior thyroid artery close to its bifurcation with the carotid in order to reduce the risk of hemorrhage. When removing the thyroid gland, a piece the size of a walnut should be left in situ on both sides. All

four vessels require ligature. The parathyroids will receive an adequate blood supply from other sources.

A more widespread use of preoperative blood calcium determinations is urged, especially in spring and in repeated operations. Caution is urged in interventions along the posterior margin of the goiter to avoid compression or injury to the retroglandular vascular arc which would threaten the viability of the parathyroids.

If stridor develops without apparent cause during or after operation, a calcium injection should be given at once and the laryngologist should be summoned immediately. When indicated, tracheotomy should not be delayed too long. When the blood calcium is below 10 mg.%, it is wise to administer AT 10. Dietary changes and blood transfusions may be indicated. If no active blood preparation is available, blood sausage can be used.

Bilateral posticus paresis may retrogress spontaneously and the cannula may then be removed under constant laryngoscopic control. Permanent posticus paresis will require surgical treatment according to Payr or Streissler. 6 references.

Laryngeal Paralysis Following Thyroidectomy. *L. Gisselsson, Lund, Sweden.* Acta chir. Scandinav. 99: 154-62, Nov. 1949.

In 597 patients operated on for thyrotoxicosis or atoxic goiter, laryngeal paralysis was observed in 12 (2%) before the operation. Of 465 patients who underwent subtotal strumectomy or hemistrumectomy for thyrotoxicosis or atoxic goiter, postoperative paralysis of the larynx was recorded in 35 (7.5%) cases. There was no statistically significant difference between the various operation groups or between the disease groups, except the group in which enucleation was performed for atoxic adenoma which differed significantly from the others. Of 120 patients, only 2 (1.7%) cases of laryngeal paralysis were observed after this operation. The 37 patients who developed paralysis of the vocal cords in association with the surgical intervention were examined 6 months to 6 years after the operation and the affection was found to have cleared in 24 cases.

It seems as if the recurrent nerve is very susceptible to injury. The grip of a pair of hemostatic forceps, even though momentary, is sufficient to cause a persistent lesion. The immediate exposure of the damaged nerve may possibly prevent the persistence of the affection. A stretching of the nerve is sufficient to provoke transient paralysis. It seems probable that if postoperative laryngeal paralysis does not clear within three months, it will be permanent. This characteristic of the condition as well as the vulnerability of the recurrent nerve is reminiscent of the situation found in intraoperative lesions of the facial nerve. Huskiness is rare even in persistent paralysis of the larynx. 12 references. 1 table.—*Author's abstract.*

MEMORIAL

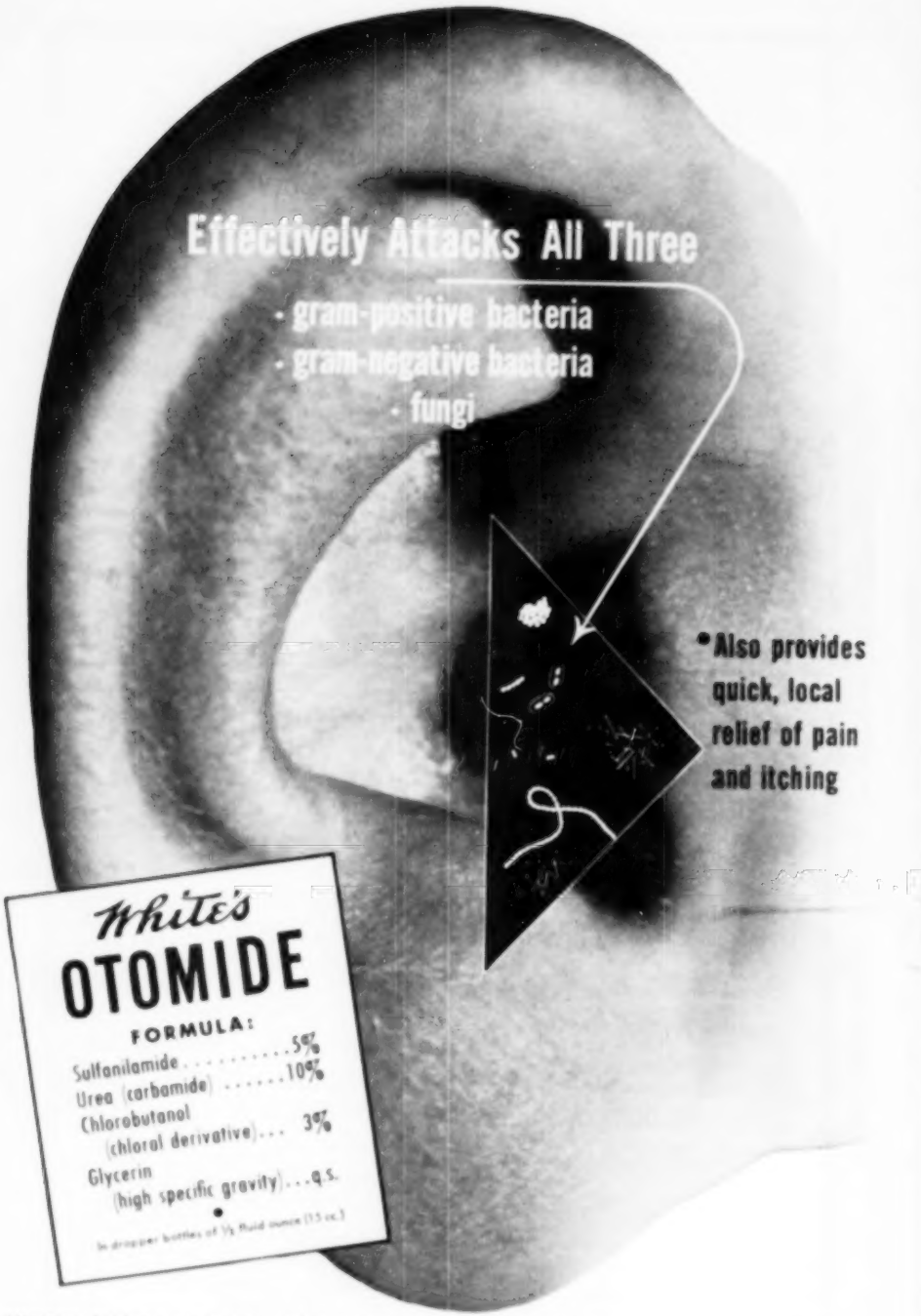
Robert Ferguson Ridpath, M.D., D.Sc. (Med.) (Ursinus)

Dr. Ridpath passed away at his home in Cape May, New Jersey, on August 10, 1950, after a long and painful illness. He was born in Philadelphia in 1876, the son of a physician in general practice, and he obtained his M.D. from the Medico-Chirurgical School in 1899. He conducted a general practice in Germantown, Philadelphia, for some years, and then became associated with the late Dr. Ross Hall Skillern in the Department of Laryngology at the Medico-Chirurgical School, where he soon rose to the grade of Associate Professor. In 1919, when this school was merged with the University of Pennsylvania, he became Associate Professor of Laryngology in its Graduate School of Medicine, which title he retained at the time of his death.

In the meanwhile, Dr. Ridpath had become Professor of Rhinolaryngology in the Medical School of Temple University in Philadelphia, retiring as Emeritus Professor in 1948. He was an experienced and popular teacher of his subject in both of the above-mentioned schools, in the American Academy of Ophthalmology and Otolaryngology, of which at one time he was First Vice-President, and in many so-called refresher courses in different parts of the country.

In addition to his membership in the Academy, Dr. Ridpath was a Fellow of the American Laryngological Association, of the American Laryngological, Rhinological and Otological Society (of which he had been Vice-President, and Chairman of the Eastern Section), Fellow of the American Medical Association and Chairman of its Section on Laryngology, Otology and Rhinology, as he was also of the similarly-titled section of the Medical Society of the State of Pennsylvania. He was a Fellow of the American College of Surgeons, and of the College of Physicians of Philadelphia. He was a former President of the Philadelphia Laryngological Society.

Certified by the American Board of Otolaryngology in 1925, he became a Director of the Board in 1930 and a Senior Consultant in 1949. He had been Consulting Otolaryngologist at the Riverview Hospital in Norristown, Pennsylvania, at the Skin and Cancer Hospital and at the Jewish Hospital in Philadelphia, where he had been for many years an active chief-of-service. He was on the Editorial Board of the Quarterly Review of Otolaryngology, and was the author of many articles relating to his specialty. He was a Captain in the United States Army, 1917–1919, serving in the base hospital at Montgomery, Alabama. He maintained offices at 1720 Spruce St., Philadelphia. He leaves a widow and a son, Robert F. Ridpath, Jr., who is a graduate engineer.



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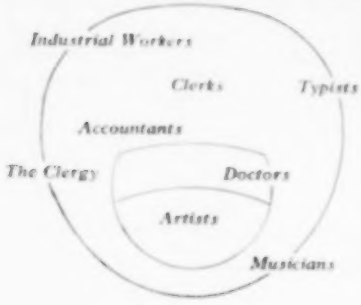

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